

حمل الآن

مجاناً وحصرياً

امتحانات رقم (1)

الترم الاول



Exam

1



Answered

Choose the correct answer (1 : 25):

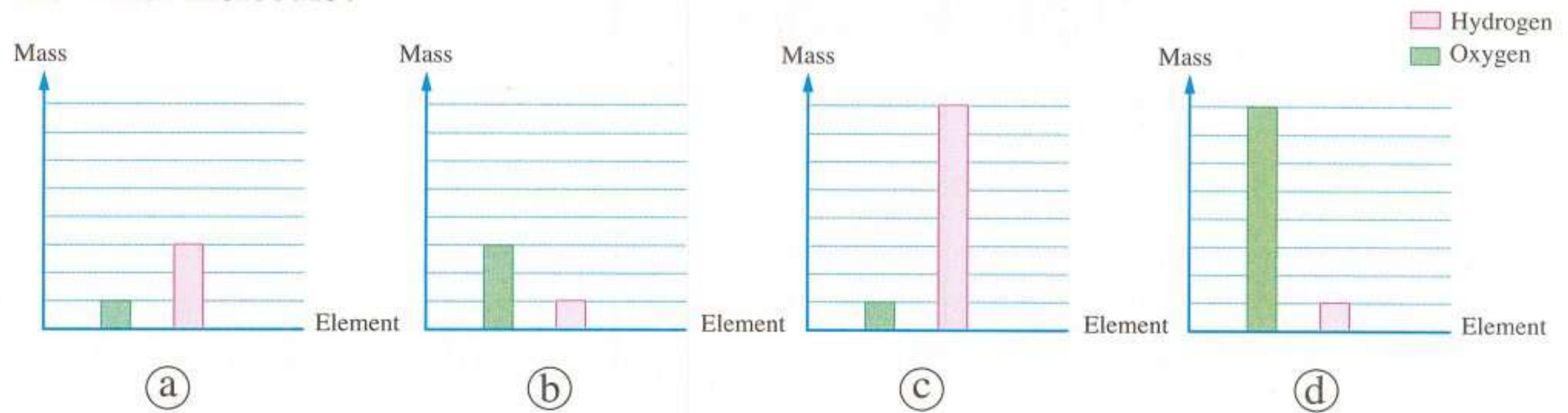
- 1 A food chain includes predatory fish, algae, zooplankton and small fish. So, what happens after the consumption of predatory fish to small fish in great numbers?
 (a) Zooplankton increase and algae decrease. (b) Zooplankton decrease and algae increase.
 (c) Zooplankton and algae increase. (d) Zooplankton and algae decrease.
- 2 Which of the following correctly describes the wind between two regions and the atmospheric pressure at them?
 (a) The wind speed is high whenever the difference in atmospheric pressure between the two regions is small.
 (b) The wind speed is low whenever the difference in atmospheric pressure between the two regions is small.
 (c) Wind arises when the pressures are equal in the two regions.
 (d) There is no relation between the wind and the atmospheric pressure.
- 3 Ray fish can live in deep depths under high water pressure because they have

	Liver that contains	Skeleton
(a)	Low amount of oils	Bony
(b)	Low amount of oils	Cartilaginous
(c)	High amount of oils	Bony
(d)	High amount of oils	Cartilaginous

- 4 A student has recorded statements about some of the atmosphere layers, as follows:
Layer (I): has the least temperature.
Layer (II): in which most of the meteors that fall towards Earth are burnt up.
Layer (III): is used in wireless communications.
Layer (IV): it is the preferable layer for airplanes flights.
 Which of the previous statements are applied to the mesosphere layer?
 (a) (I) and (III). (b) (II) and (IV).
 (c) (I) and (II). (d) (III) and (IV).

- 5 In iron and steel industry, iron is melted with iron ores which is an example for
 (a) re-using
 (b) recycling
 (c) searching for eco-friendly alternatives
 (d) producing a renewable energy

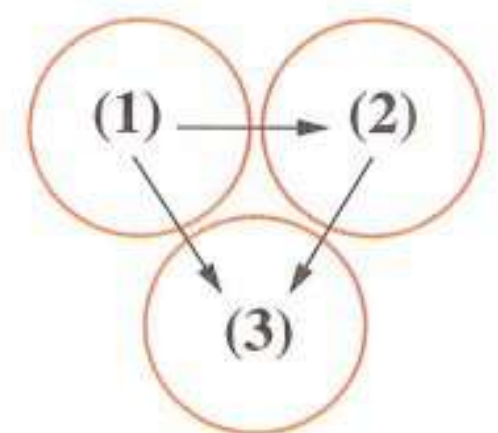
- 6 Which of the following graphs represents the mass of each of hydrogen and oxygen in the water molecule?



- 7 The opposite figure shows the molecular structure of one of the gases that exists in the atmosphere. What do you expect to happen to the rate of photosynthesis of plants on the Earth's surface when getting exposed to huge amounts of this gas?



- 8 The opposite figure represents the direction of water transfer by osmosis among three adjacent living cells. Which of the following represents the correct arrangement of cells from the least to the highest water concentration?



- 9 One of sustainability practices to preserve the environment for the future generations is

- (a) reducing the use of renewable natural resources
(b) relying on fossil fuel
(c) recycling plastic
(d) the construction and lands development.
- 10 Which of the following leads to a decrease in pH value if its percentage is increased in the soil?
(a) CaCO_3 (b) H_2O (c) NaCl (d) H_2SO_4
- 11 What is the correct order of the stages that a quantity of seawater goes through before returning to seas again?
(a) Evaporation – Condensation – Rainfall – Streaming.
(b) Rainfall – Streaming – Evaporation – Condensation.
(c) Streaming – Evaporation – Condensation – Rainfall.
(d) Condensation – Rainfall – Streaming – Evaporation.

12 Which of the following leads to a decrease in the soil humidity?

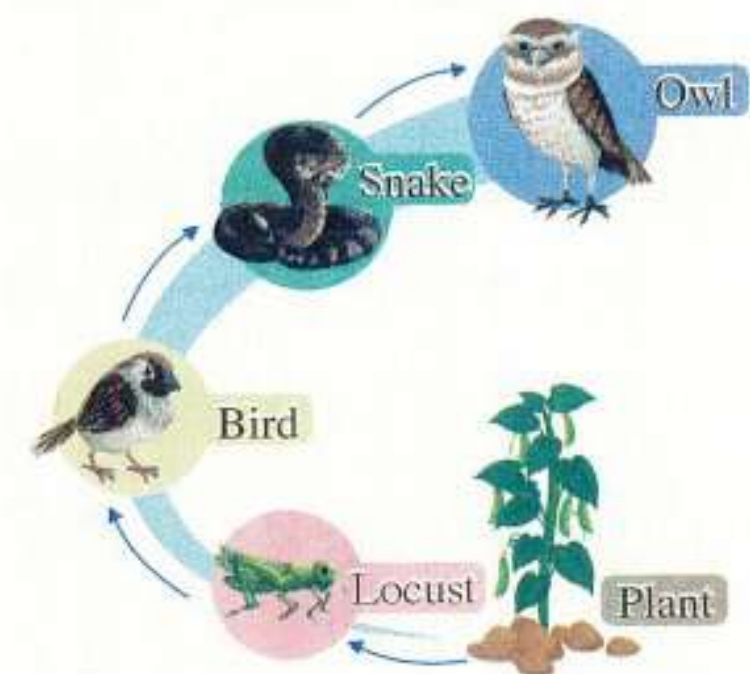
- (a) Decreasing the air temperature.
- (b) Decreasing the particles size of the soil.
- (c) Increasing the soil salinity.
- (d) Increasing the rainfall.

13 In the aquatic environment, which of the following is **not** affected by seasonal changes throughout the year?

- (a) Photosynthesis rates.
- (b) Nutrients availability for marine organisms.
- (c) Coral reefs flourishing.
- (d) Deep-depths fish activity.

14 The opposite figure shows a food chain in an ecosystem, which of the following is from the probable results for increasing the number of snakes?

- (a) The ecosystem stability.
- (b) Supporting the food chain.
- (c) The low probability of diseases spreading.
- (d) The ecosystem imbalance.



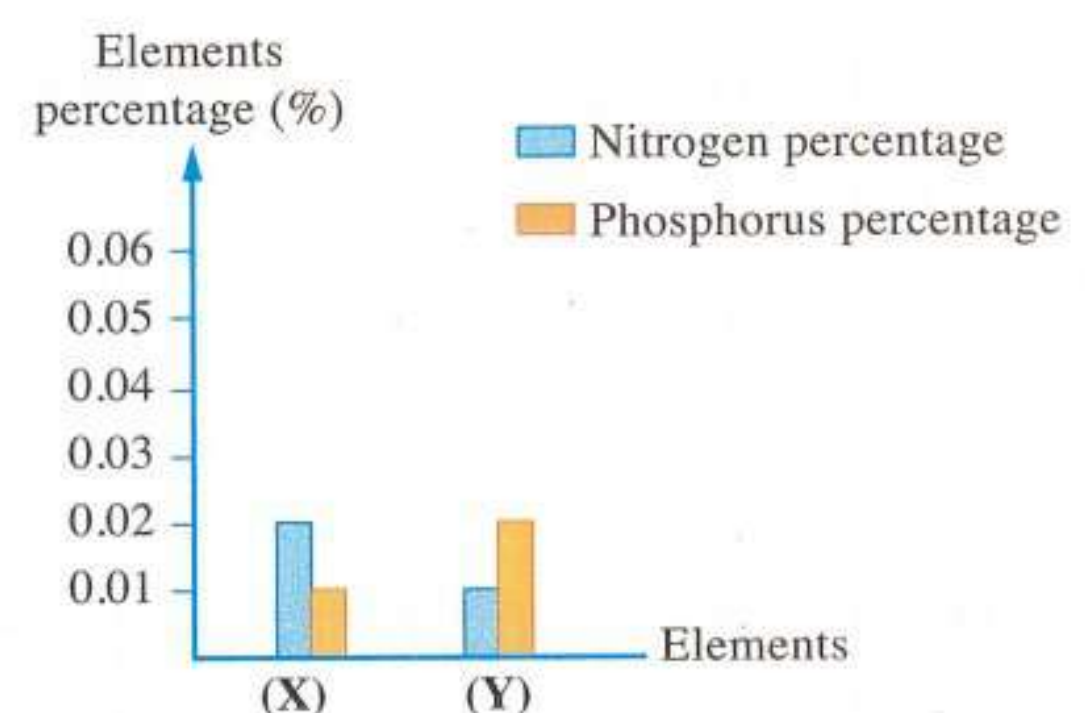
15 An amount of water of mass 1 kg at a temperature 10°C has lost an amount of heat of 37800 J through an interval of time (t_0), then the density of water through that period (t_0)

(Where the specific heat of water is 4200 J/kg.K)

- (a) decreases continuously
- (b) decreases then increases
- (c) increases continuously
- (d) increases then decreases

16 The opposite graph shows the percentages of nitrogen and phosphorus elements in two different soils (X) and (Y). If each of nitrogen and phosphorus elements represent nearly 0.02% from the mass of the dry healthy soil. Therefore, the plants in soils (X) and (Y) suffer from

- (a) (X) delaying the floral growth / (Y) roots weakening
- (b) (X) yellowing leaves / (Y) roots weakening
- (c) (X) roots weakening / (Y) yellowing leaves
- (d) (X) delaying the floral growth / (Y) yellowing leaves



17 In a type of farm animals, a mating of a white male with a black female takes place, producing 6 black-colored and 6 white-colored individuals. This case represents an example of

- (a) ecological diversity
- (b) genetic diversity
- (c) genetic diversity and diversity among species
- (d) diversity among species

18 The probability of nosebleeds increases for mountain climbers at the peaks of mountains due to

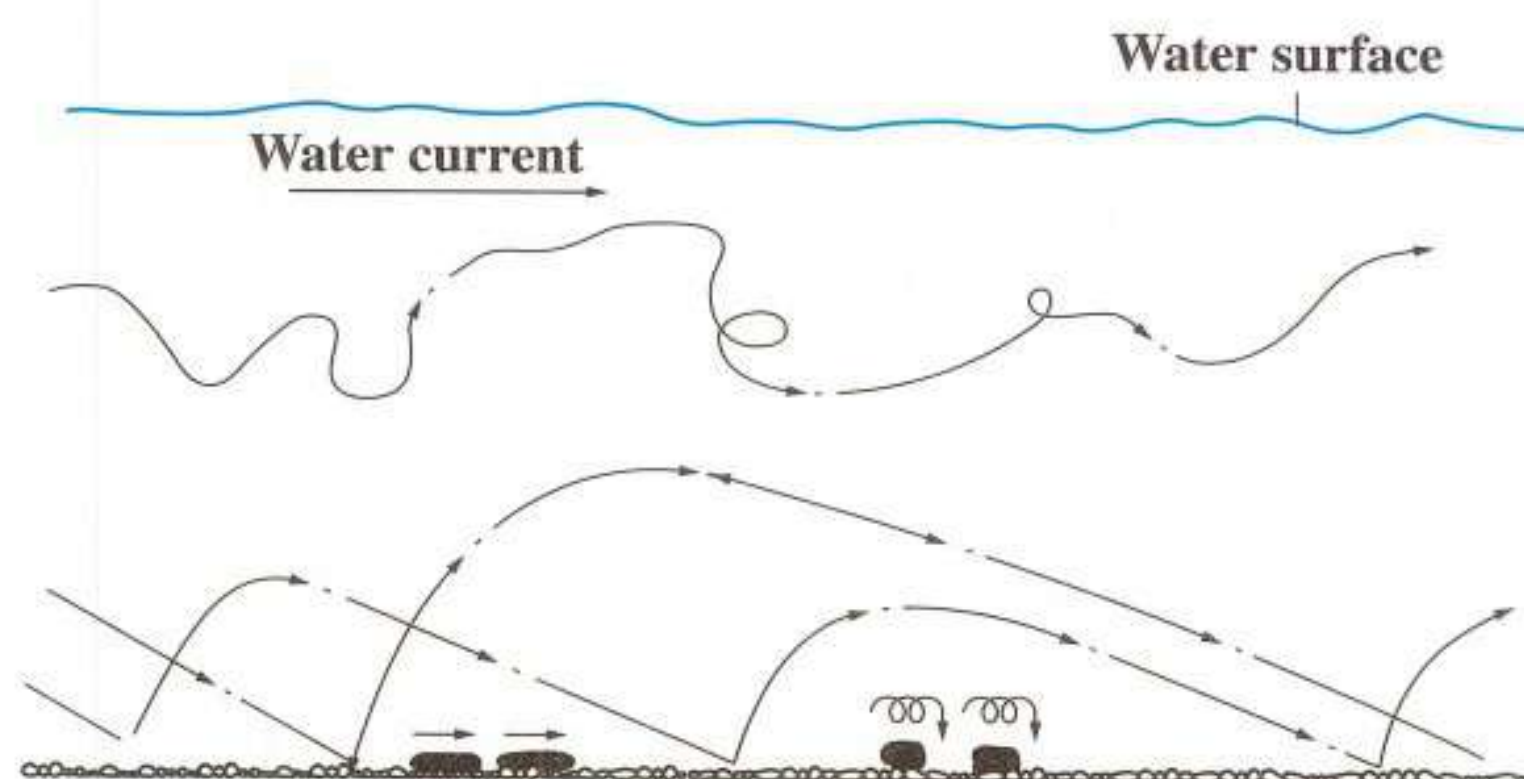
- (a) increasing the air temperature
- (b) increasing the air density
- (c) decreasing the atmospheric pressure
- (d) decreasing the mass of air molecules

19 Which of the following represents the correct arrangement for the boiling points of the following solutions that have equal concentrations at the standard atmospheric pressure?

- (a) $\text{NaCl} < \text{MgCl}_2 < \text{Al}_2(\text{SO}_4)_3$
- (b) $\text{NaCl} < \text{Al}_2(\text{SO}_4)_3 < \text{MgCl}_2$
- (c) $\text{Al}_2(\text{SO}_4)_3 < \text{MgCl}_2 < \text{NaCl}$
- (d) $\text{Al}_2(\text{SO}_4)_3 < \text{NaCl} < \text{MgCl}_2$

20 The opposite figure shows one of the weathering types in a river, which is the weathering through processes.

- (a) physical
- (b) mechanical
- (c) chemical
- (d) biological



21 Which of the following techniques is preferred to be used to measure the percentages of the gases forming smog?

- (a) Liquid chromatography analysis.
- (b) Wet chemical analysis.
- (c) Ultraviolet spectroscopy.
- (d) Atomic absorption spectroscopy.

22 What is the probable result for increasing the temperature of an aquatic environment on the organisms that live in it?

- (a) The difficulty of respiration.
- (b) Increasing the photosynthesis process.
- (c) Decreasing the calcification rate.
- (d) Increasing the living organisms activity.

23 Leguminous plants can produce nutrients such as proteins as they depend on nodular bacteria, so which of the following is not expected when the soil gets polluted, and these bacteria lose their function?

- (a) Lack of nitrogenous compounds. (b) Lack of soil fertility.
(c) Lack of producing plant proteins. (d) Lack of phosphorus element.

24 All the following happens as a result of chemical weathering of rocks, **except**

- (a) the formation of primary minerals (b) the formation of secondary minerals
(c) the decomposition of minerals (d) changing the chemical structure

25 Which of the following temperatures is the most suitable for growing tomato well at morning?

- (a) 282 K (b) 300 K (c) 318 K (d) 325 K

Answer the following questions (26 : 30):

26 Give an example for how the deep-water fish are adapted with the decrease in the amount of light. And determine the type of adaptation.

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27 Give reason for: The percentage of forming the nitrogen oxides in air is very low.

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28 In your opinion why the electric cars are a good choice for improving the quality of the atmospheric air?

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29 What is the role of soil in supporting the biodiversity of animals?

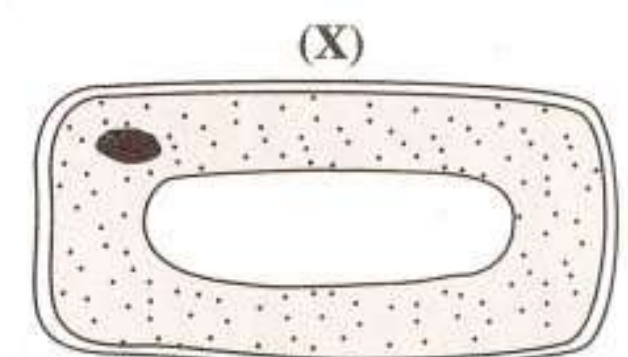
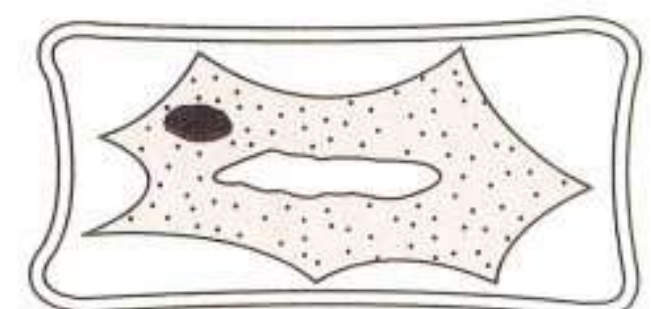
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30 The bottom of Mariana trench is considered the deepest point in oceans. It was found that the water density in the trench bottom increases by nearly 5% from its density at the water surface. From your study, illustrate the reasons for increasing the density.

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Choose the correct answer (1 : 25) :

- 1 Which of the following is from the sustainable practices that are used in agriculture?
- (a) The overuse of pesticides.
 - (b) Using organic farming and crop rotation techniques.
 - (c) Deforestation for increasing the agricultural areas.
 - (d) Non-considering the soil resting cycle.
- 2 Which of the following is **not** correct about gasoline?
- (a) It affects the areas surrounding oil refineries.
 - (b) It increases the risk of cancer.
 - (c) It seeps from the petrochemical factories.
 - (d) It causes the salinization of soil.
- 3 What is the probable effect of the global warming on the seas and oceans?
- (a) Loss of biodiversity in the seas.
 - (b) A decrease in the sea level.
 - (c) A decrease in the temperature of water.
 - (d) Ocean water receding.
- 4 The liquid chromatography resembles gas chromatography in
- (a) the sample carrying material
 - (b) the physical state of the substance whose components are to be measured
 - (c) the method of showing results
 - (d) the form on which waste comes out
- 5 Which of the following compounds whose presence in the atmosphere of an area may cause a decrease in the pH value in the soil of this area?
- (a) Nitrogen.
 - (b) Nitrogen oxides.
 - (c) Water vapor.
 - (d) Ozone.
- 6 If you know that the concentration of sucrose solution inside plant cell (X) equals 5%, what is the concentration of the sucrose solution that leads to converting the cell from figure (1) to figure (2) when the cell is put in the solution?
- (a) 0%
 - (b) 1%
 - (c) 5%
 - (d) 10%

**Figure (1)****Figure (2)**

- 7 If the solubility of carbon dioxide gas in aquatic environment (X) is more than that in aquatic environment (Y). Which of the following is the reason for that?

	Aquatic environment (X)	Aquatic environment (Y)
(a)	The water temperature is higher	The water temperature is lower
(b)	Freshwater environment	Saltwater environment
(c)	Water is stable	Water is turbulent
(d)	The low number of dead fish	The high number of dead fish

- 8 When the temperature of the body changes from 50° F to 280 K, the internal energy of the body

- (a) decreases (b) increases
(c) doesn't change (d) the answer can't be determined

- 9 To maintain the wellness of soil and increase the productivity of crops, we should take into consideration

- (a) planting green belts around the cultivated lands
(b) the overuse of chemical fertilizers
(c) decreasing the organic fertilizers
(d) repeating the cultivation of the same crop for several years

- 10 Which of the following gases contributes to the formation of smog?

- (a) Oxygen. (b) Sulphur dioxide. (c) Nitrogen. (d) Argon.

- 11 Which of the following compounds its overuse in the United States causes the endangerment of the bald eagle?

- (a) Chlorodane. (b) Dieldrin. (c) DDT (d) Formaldehyde.

- 12 Which of the following enhances the ecological balance in the aquatic ecosystem?

- (a) Reducing the metabolic rate of living organisms.
(b) Reducing the interaction among living organisms' species.
(c) Increasing the acidification process.
(d) Increasing the photosynthesis rate of phytoplankton.

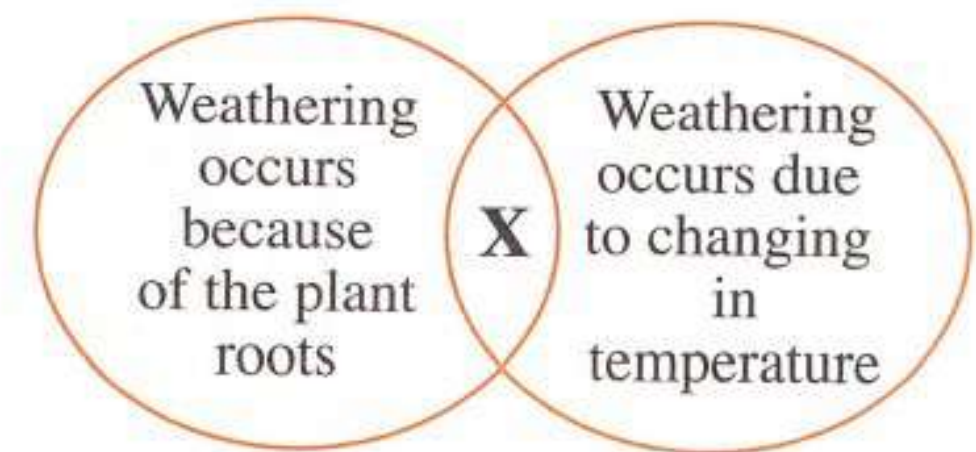
- 13 The opposite figure shows the deposits that are formed behind a hill, due to one of the mechanical processes which is probable to be

- (a) water currents movement and rains
(b) freezing of water in fractures repeatedly
(c) the activity of living organisms
(d) the erosion of mineral components



- 14 The opposite figure represents two types of weathering that share in property (X). What does (X) represent?

- (a) The formation of secondary minerals.
- (b) The formation of primary minerals.
- (c) The fragmentation of rocks.
- (d) The chemical decomposition of rocks.



- 15 In houses, heaters are placed on the floor of a room, because when their surrounding air heats up, it

- (a) goes up because it is denser than cold air
- (b) goes up because it is less dense than cold air
- (c) settles at the same level because it is denser than cold air
- (d) settles at the same level because it is less dense than cold air

- 16 The absence of the atmosphere in Mercury makes the temperature of its surface to be

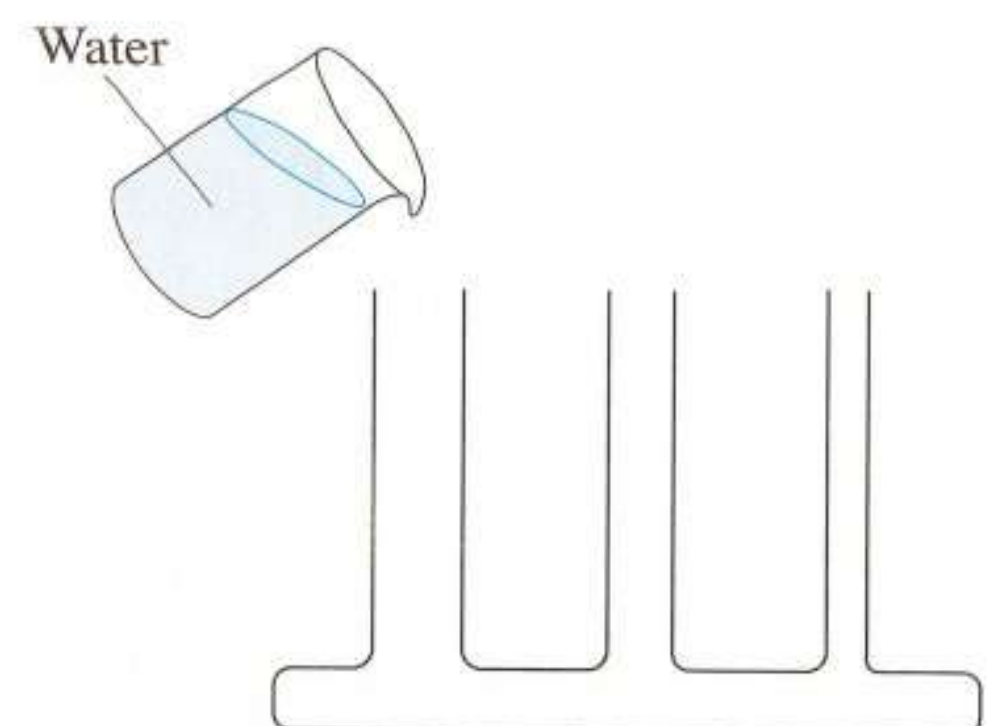
	At daytime	At night
(a)	Very low	Very low
(b)	Very low	Very high
(c)	Very high	Very low
(d)	Very high	Very high

- 17 The amount of heat required to raise a certain amount of a liquid to its boiling point at sea level comparing to that at the top of a mountain, is

- (a) greater than one
- (b) smaller than one
- (c) equal to one
- (d) unpredictable

- 18 An amount of water is poured into an empty vessel as shown in the opposite figure, which of the following quantities is the same in the three branches at equilibrium?

- (a) Mass.
- (b) Weight.
- (c) Height.
- (d) Volume.



- 19 Which of the following acts on filtering the seeped groundwater inside the soil?

- (a) Soil grains.
- (b) The plant roots.
- (c) Earthworms.
- (d) The decomposers bacteria.

- 20** When dissolving sodium bicarbonate in water
- (a) the salt dissociates but no hydrolysis occurs
 - (b) hydrolysis occurs and the solution becomes acidic
 - (c) hydrolysis occurs and the solution becomes alkaline
 - (d) the salt doesn't dissociate and no hydrolysis occurs
- 21** The organ that adapted in the salmon fish to the change in the amount of dissolved oxygen in water is/are
- (a) gills
 - (b) heart
 - (c) two kidneys
 - (d) stomach
- 22** If the temperatures at the base and the top of Cairo Tower are 30°C and 28.94°C respectively, the height of the tower is approximately equal to
- (a) 334 m
 - (b) 279 m
 - (c) 187 m
 - (d) 180 m
- 23** An amount of water of mass m is poured in a container then another amount of water of mass m is added to it at the same temperature, then the specific heat of water
- (a) is doubled
 - (b) is tripled
 - (c) remains unchanged
 - (d) is halved
- 24** Tigers that live in warm regions have a thinner layer of fur than those which live in cold regions, this is an example for
- (a) ecological diversity only
 - (b) diversity among species only
 - (c) genetic diversity only
 - (d) ecological and genetic diversity
- 25** Three glass vessels, each of them contains the same volume of a different liquid, a hydrometer was used to measure the density of the three liquids, so its position at equilibrium was as shown in the following figures, the correct order of these figures according to the mass of the liquid in each vessel is

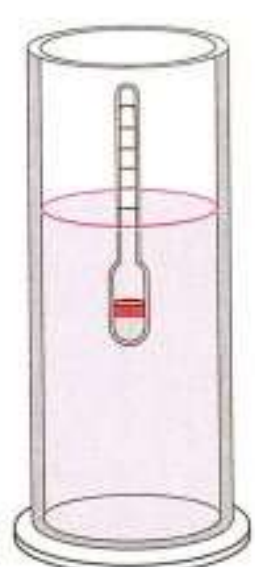


Figure (1)

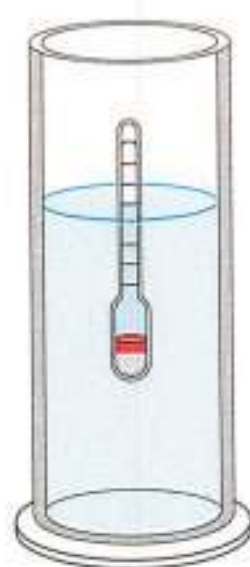


Figure (2)

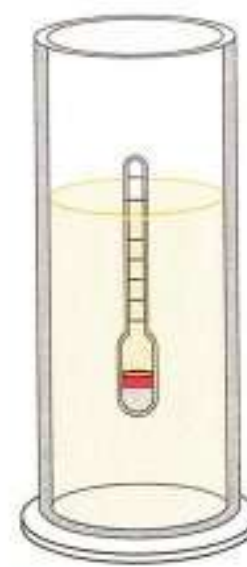


Figure (3)

- (a) $(3) > (2) > (1)$
- (b) $(2) > (3) > (1)$
- (c) $(1) > (2) > (3)$
- (d) $(1) > (3) > (2)$

Answer the following questions (26 : 30):

26 Explain: algae and phytoplankton are abundant in the surficial layers of water bodies.

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27 The following table shows the colors of one of the prepared indicators from the flowers of a plant:

Color	Red			Purple			Blue		Greenish-blue		Yellowish-green	
pH	1	2	3	4	5	6	7	8	9	10	11	12

What is the formed color when adding drops of this indicator to a sodium chloride solution?

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28 Egypt resorts to construct many power generating stations by using solar panels. **Show** the importance of this, according to your study to the concept of sustainability.

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29 Give reason for: the presence of nitrogen in the soil has a great importance in one of the plant growth stages.

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30 Mention the most important strategies that are required for limiting air pollution.

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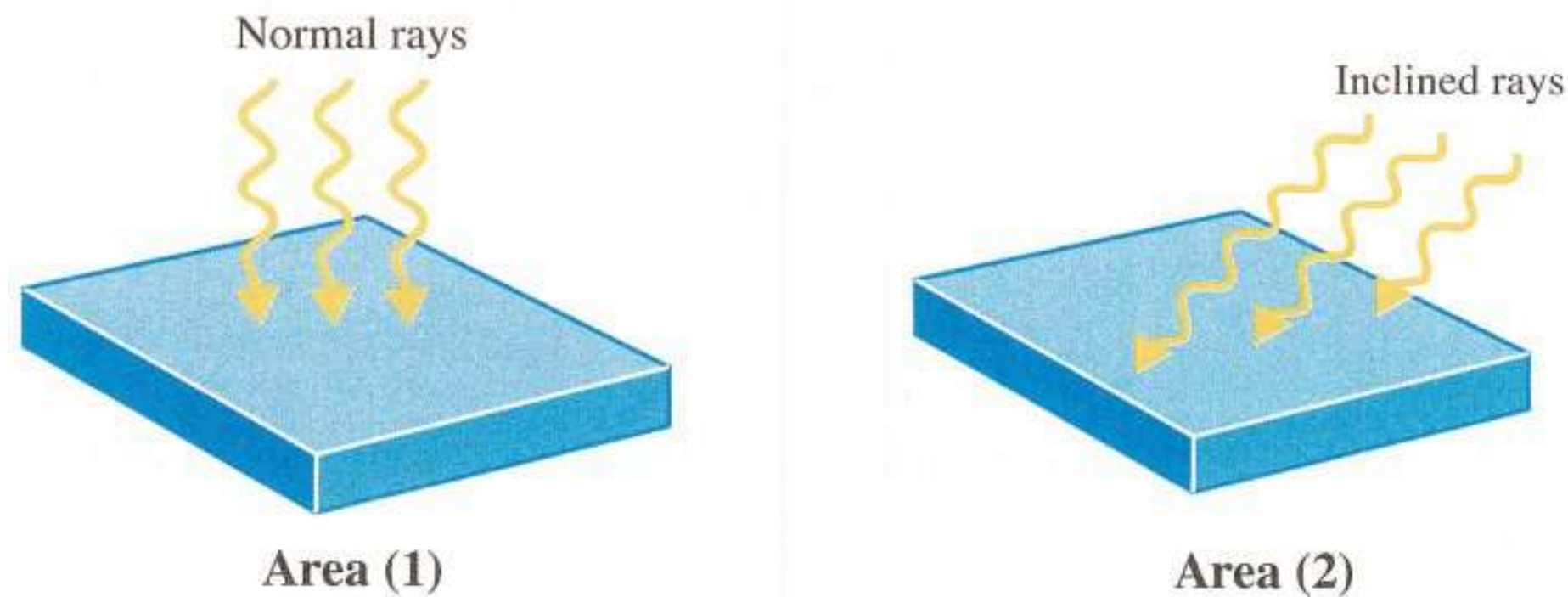
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Exam 3 ? Answered

Choose the correct answer (1 : 25) :

- 1 Two beams of sun rays fall on two areas (1) and (2) as shown in the following figure, then the ratio between the amount of heat energy which is received by a unit area in area (1) to that in area (2) is

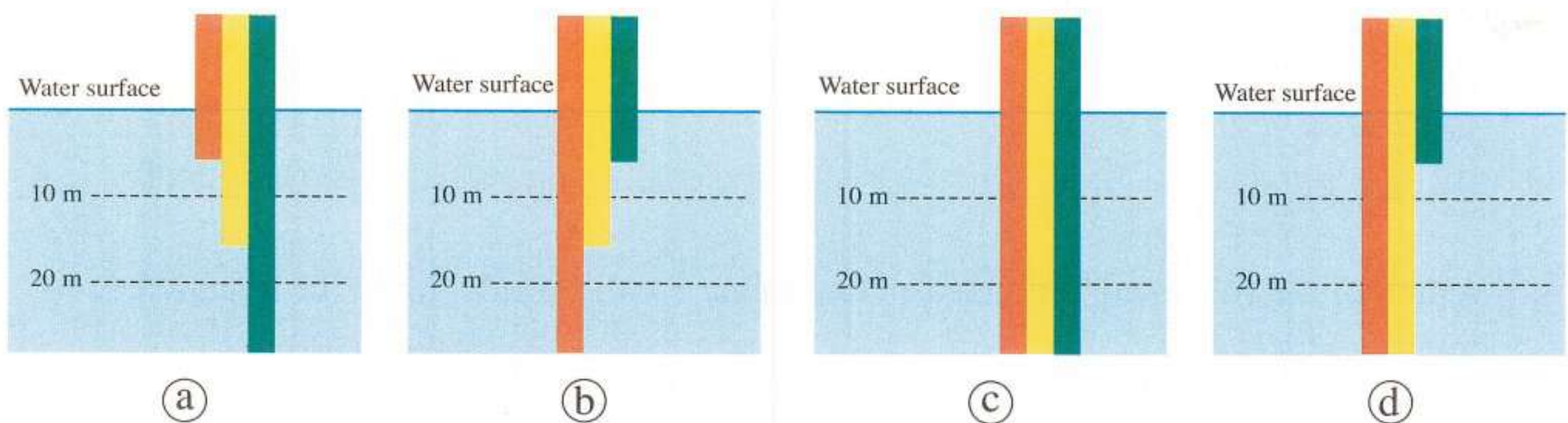


- (a) greater than one (b) less than one
(c) equal to one (d) the answer can't be determined

- 2 The soil can be protected from erosion through

- (a) increasing its aeration (b) cultivating trees in it
(c) decreasing its humidity (d) increasing worms in it

- 3 When solar radiation falls on the surface of ocean water, which of the following figures correctly represents how deep orange, yellow and green lights penetrate through the water within a depth of 20 m approximately from the surface?



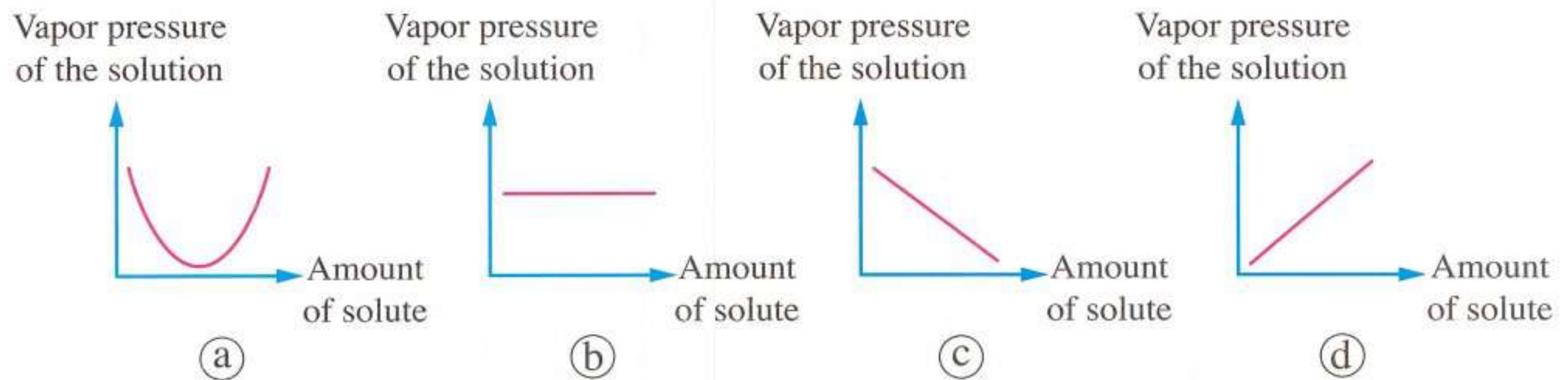
- 4 What is the type of biodiversity that shown in the opposite figure?

- (a) Genetic diversity only.
(b) Diversity among species only.
(c) Ecological diversity only.
(d) Genetic diversity and diversity among species.



- 5 The ratio between the humidity of sandy soil to the humidity of clay soil at the same climatic and environmental conditions is
 (a) greater than one (b) less than one (c) equal to one (d) Equal to zero

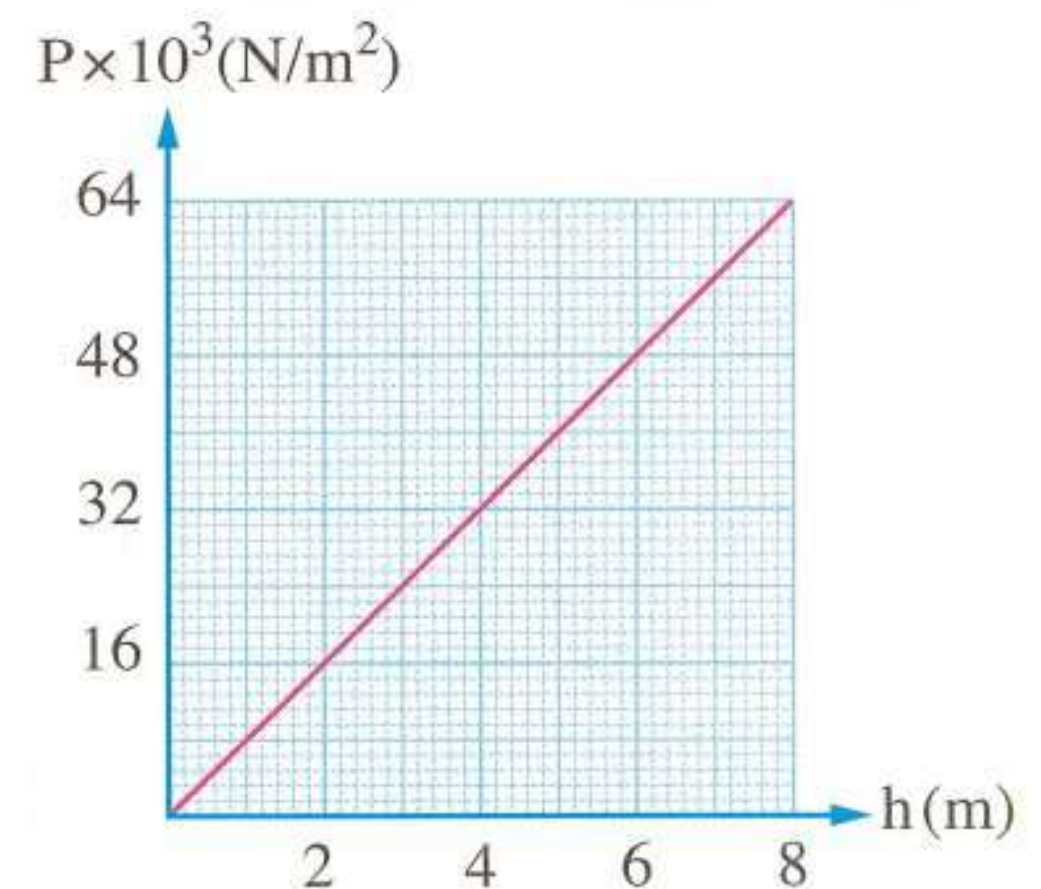
- 6 Which of the following graphs represents the relation between the vapor pressure of the solution and the amount of solute at temperature ($T = 25^\circ \text{C}$)?



- 7 The gas resulted from the reaction between nitrogen oxides and hydrocarbons under the effect of sunlight
 (a) causes asthma
 (b) has a constant percentage in the atmosphere
 (c) causes the nervous system disruption of
 (d) decreases the smog

- 8 The opposite graph represents the relation between the liquid pressure (P) at a point inside a liquid and the depth (h) from the liquid surface, the density of the liquid equals
 (Where: $g = 10 \text{ m/s}^2$)

- (a) 650 kg/m^3
 (b) 800 kg/m^3
 (c) 1250 kg/m^3
 (d) 1400 kg/m^3

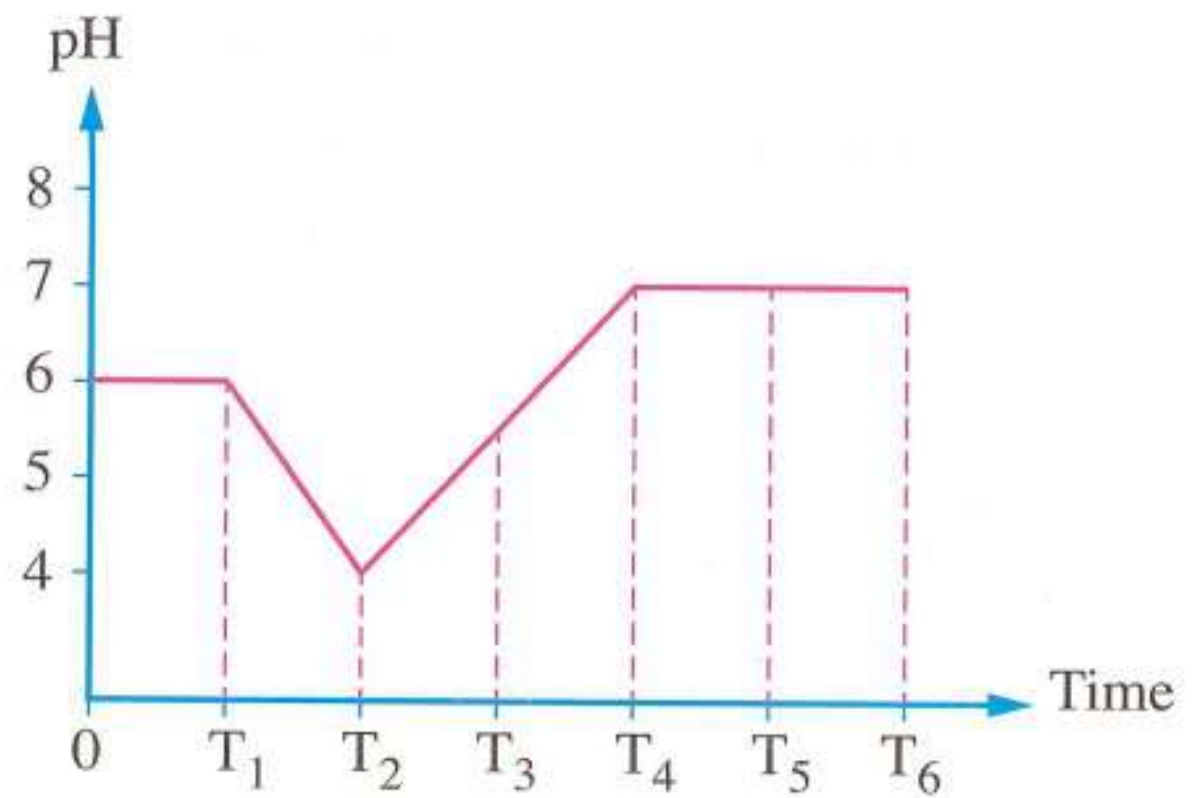


- 9 Which of the following represents a real threat for the corals life in the aquatic environment?
 (a) The presence of predator fish. (b) Reducing the number of sea urchins.
 (c) Increasing the water temperature. (d) The growth of algae inside their tissues.

- 10 Decreasing the thickness of the soil horizons that are formed from a certain rock is attributed to increasing
 (a) the climate effects on the rock
 (b) the time period in which the soil is formed
 (c) the living organisms effect on the rock
 (d) the hardness degree of the rock

- 11** The opposite graph shows the change in the pH value of an agricultural soil over time, what is the time intervals that follows the acid rainfall on this soil?

(a) $T_0 : T_1$
 (b) $T_1 : T_2$
 (c) $T_2 : T_3$
 (d) $T_4 : T_5$



- 12** Which of the following frequencies of the electromagnetic waves are reflected through the ionosphere layer?

(a) 12 MHz (b) 45 MHz (c) 50 MHz (d) 60 MHz

- 13** Which of the following gases mainly contributes to the formation of smog and considered a reason for global warming?

(a) Ar (b) O_3 (c) O_2 (d) N_2

- 14** The two processes in which the physical state of water is the same after their occurrence directly are

(a) evaporation and condensation (b) condensation and transpiration
 (c) transpiration and evaporation (d) condensation and freezing

- 15** Which of the following directly harms the human health?

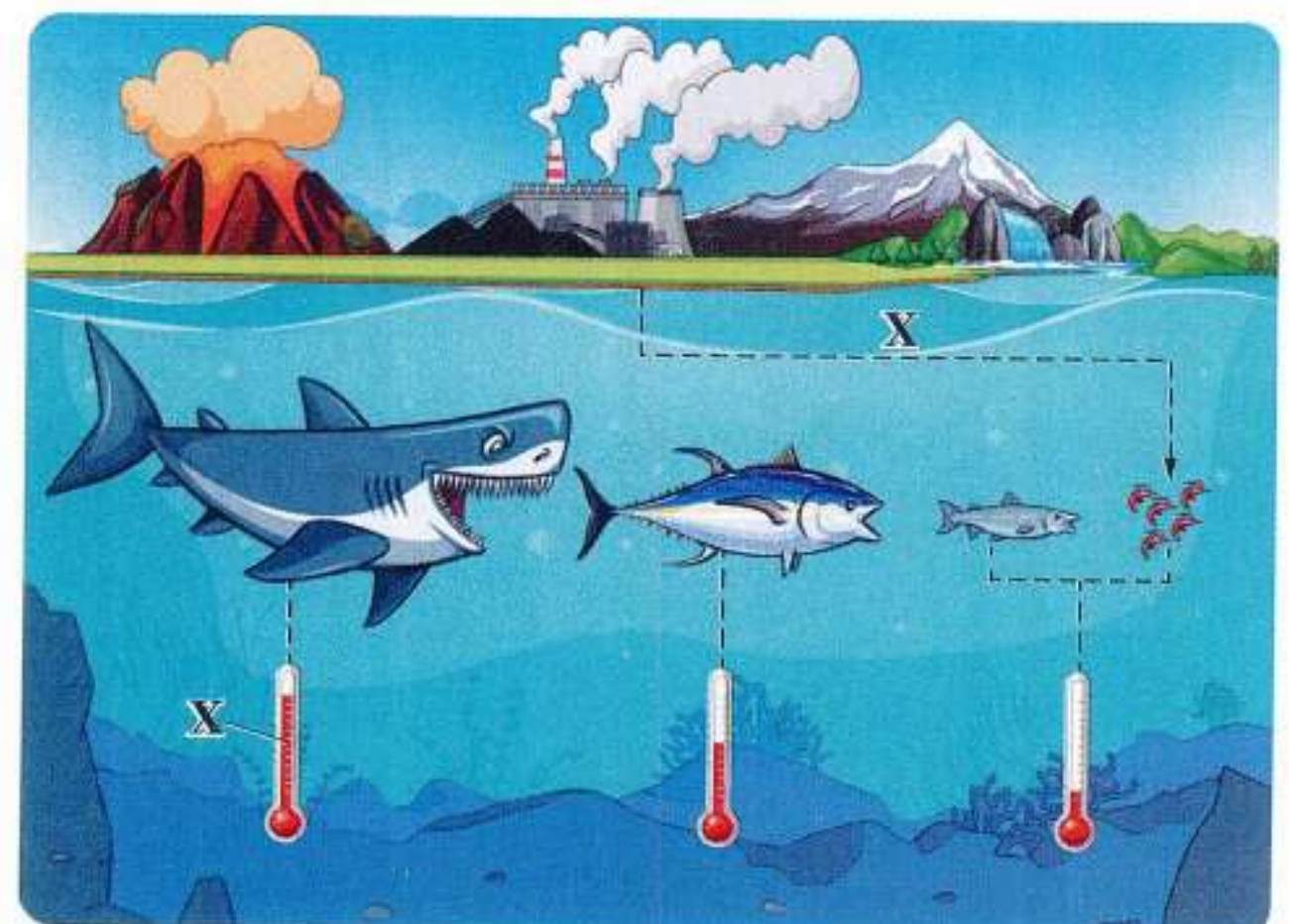
(a) The overhunting of animals.
 (b) The desertification of agricultural soil.
 (c) Discharging the industrial waste in rivers.
 (d) Deforestation for increasing the agricultural land.

- 16** Which of the following gases in the atmosphere has the greatest effect on the climate phenomena?

(a) Oxygen. (b) Water vapor. (c) Argon. (d) Nitrogen.

- 17** The opposite figure shows a part of a food chain in an aquatic environment, through which element (X) is transported, which is poisonous for human. What does element (X) represent?

(a) Calcium.
 (b) Mercury.
 (c) Phosphorus.
 (d) Magnesium.

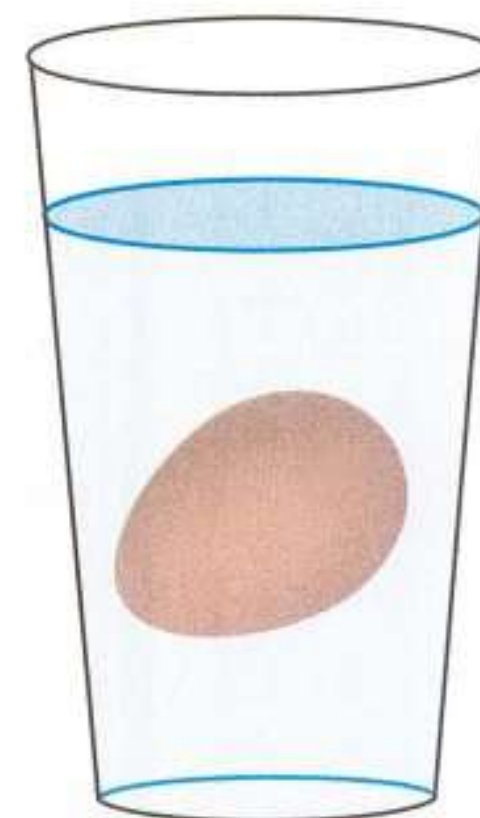


18 In the life cycle of salmon fish, which of the following phases used to live in an aquatic environment of a low osmotic pressure?

- (a) Eggs only. (b) Adult salmon only.
(c) Eggs and young salmon. (d) Young and adult salmon.

19 The opposite figure shows the settling position of an egg placed in a quantity of fresh water, when a large quantity of table salt is dissolved in water, then the egg

- (a) rises
(b) sinks
(c) remains in its position
(d) the answer can't be determined



20 Which of the following is from the reasons of global warming phenomenon?

- (a) Fossil fuel burning. (b) Increasing photosynthesis rate.
(c) Animals overhunting. (d) Industrial wastewater treatment.

21 The ratio between the mass of ozone gas in stratosphere layer to its mass in troposphere layer is

- (a) greater than 1 (b) smaller than 1
(c) equal 1 (d) the answer can't be predicted.

22 What results from the repeated cultivation of rice crops that require large amounts of water for several consecutive years in the same agricultural soil?

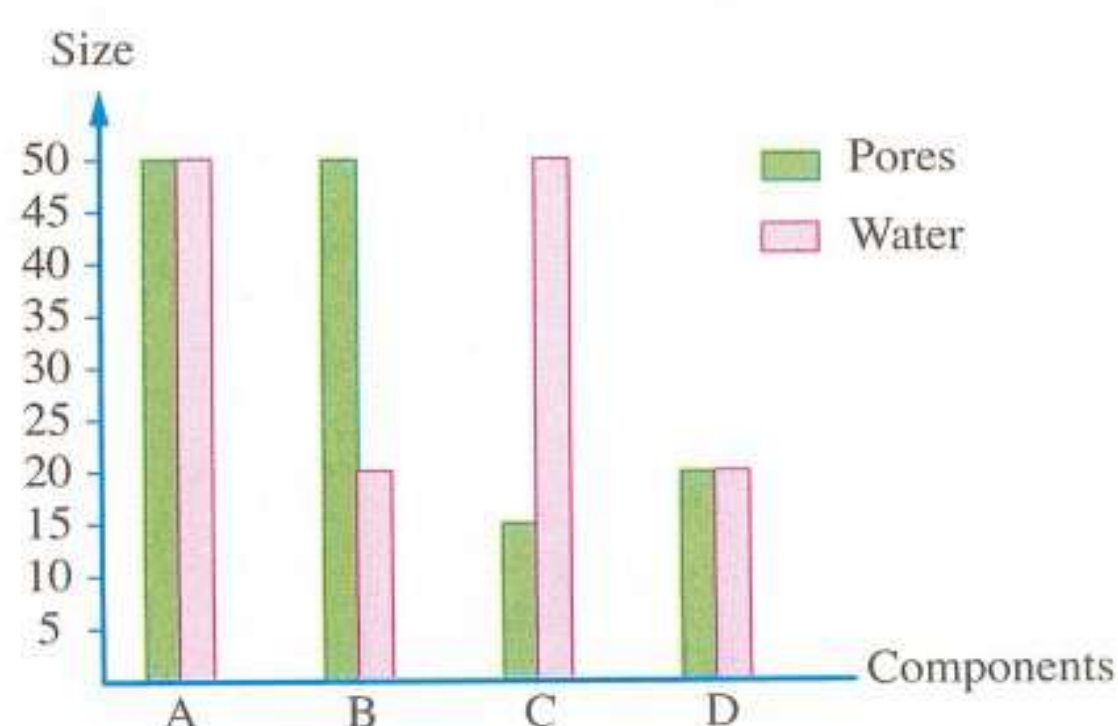
- (a) Decreased concentration of salts and nutrients.
(b) Increased concentration of salts and nutrients.
(c) Increased concentration of salts and decreased concentration of nutrients.
(d) Decreased concentration of salts and increased concentration of nutrients.

23 When spraying lime fertilizer on chemically neutral soil, it is expected that the pH of the soil becomes

- (a) 3 (b) 7 (c) 8 (d) 5.6

24 Which column in the opposite graph shows the correct relation between the ratio of pores size of sandy soil to the percentage of water it retains?

- (a) A
(b) B
(c) C
(d) D



25 Which of the following is an example for the structural adaptation in aquatic living organisms?

- (a) Salmon migration for reproduction.
- (b) Increased respiration efficiency of deep-depths fish.
- (c) Swim bladder in some fish.
- (d) Venom secretion in some fish.

Answer the following questions (26 : 30):

26 Compare between: wood frog, Antarctic icefish and thorny devil lizard "according to: the way of adaptation with the temperature of the environment where they live".

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27 What are the followed strategies to protect the threatened species with extinction? "*Two examples are enough*".

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28 Give reason for: the death of many forests' trees that their soil have a low pH value.

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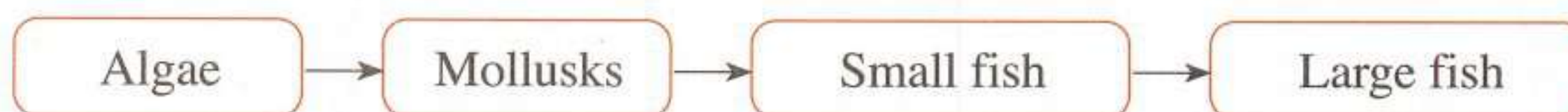
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29 A piece of aluminum of mass 0.025 kg and temperature 100°C was thrown in an amount of water of mass 0.064 kg and temperature in celsius (t). So, the system final temperature became 40°C. If you know that the specific heat of water and aluminum respectively are 4200 J/kg.K and 897 J/kg.K. **Assuming that there is no thermal leakage from the system, calculate** the water temperature (t) before throwing the aluminum piece in it.

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30 The following diagram represents an aquatic food chain:



What is the effect of decreasing the level of the dissolved carbon dioxide gas in water on the energy flow through this chain?

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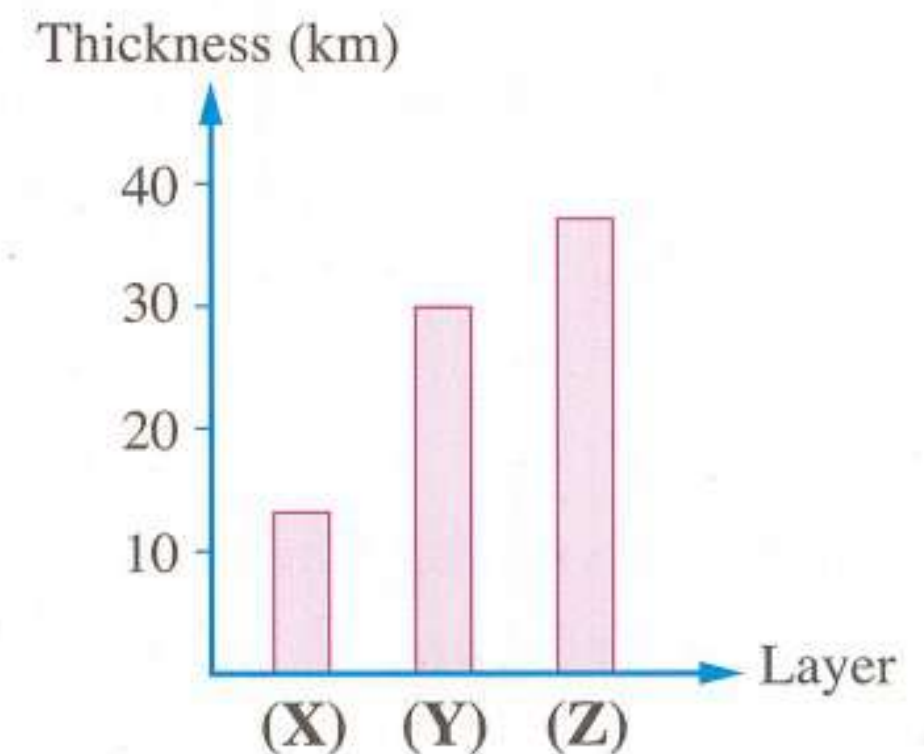
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Exam 4 ? Answered

Choose the correct answer (1 : 25) :

- 1** How many hydrogen atoms enter in the formation of 6 hydrogen bonds among a number of water molecules?
 (a) 6 (b) 12 (c) 18 (d) 24

- 2** The opposite figure represents the average thickness of the three closest layers of the atmosphere to the Earth's surface, in which of these layers does ozone gas have a harmful effect?
 (a) In layer (X).
 (b) In layer (Y).
 (c) In layer (Z).
 (d) In layers (Z) and (Y).



- 3** Which of the following pathways represents the highest probability for the spreading of a certain disease which affects cats?
 (a) Black cat → White cat → Brown cat → Grey cat
 (b) Black cat → White cat → Horse → Grey cat
 (c) Black cat → Horse → Kangaroo → Grey cat
 (d) Black cat → White cat → Brown cat → Kangaroo

- 4** A salty solution of mass 1 kg and volume $9.8 \times 10^{-4} \text{ m}^3$, then its relative density equals
 (Where the density of water = 1000 kg/m^3)
 (a) 0.98 (b) 1 (c) 1.02 (d) 1.04

- 5** The opposite figure represents four regions of electromagnetic spectrum, which of the following represents the regions of spectrum (A) and spectrum (B) respectively?

B	A	Ultraviolet ray	Visible light
---	---	-----------------	---------------

- (a) Radio waves, Microwaves. (b) X-rays, Gamma rays.
 (c) Microwaves, Radio waves. (d) Gamma rays, X-rays.

- 6** The reading of the mercury barometer at the foot of the Great Pyramid is 750 mm Hg and at its top is 736.7 mm Hg, then the height of the Great Pyramid is approximately equal to
 (Where: the average density of air = 1.3 kg/m^3 , density of mercury = 13600 kg/m^3)
 (a) 130 m (b) 139 m (c) 149 m (d) 151 m

7 To treat the yellowing of plant leaves, fertilizers that are rich in element are used.

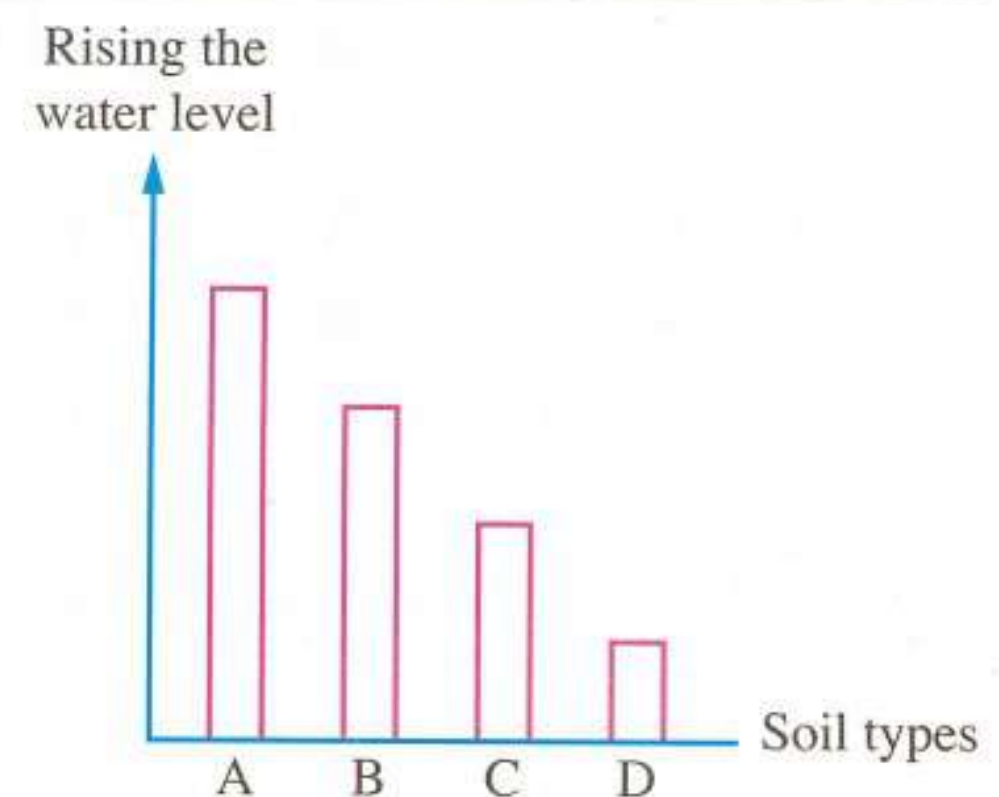
- (a) P (b) Ca (c) N (d) S

8 How can the concentration of urea in the shark body help in its adaptation to the marine environment?

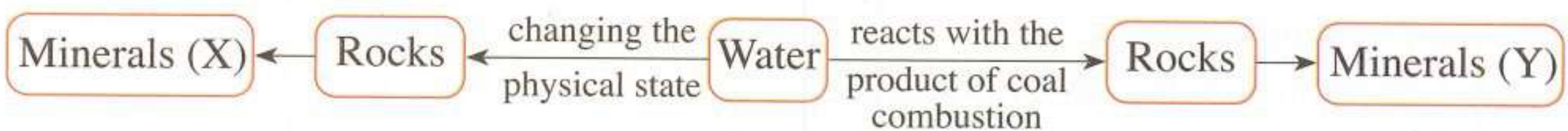
- (a) It increases the entry of water through skin.
(b) It decreases the loss of water from the body.
(c) It increases the exit of salts through skin.
(d) It decreases the osmotic pressure inside the body.

9 The opposite graph represents the rise of groundwater level by capillarity phenomenon in four types of soil, which of the columns shown in the graph may represent the sandy soil?

- (a) A
(b) B
(c) C
(d) D



10 The following diagram shows two processes where water affects rocks:



So, it is expected that minerals (X) and (Y) are respectively.

- (a) primary minerals and primary minerals
(b) secondary minerals and secondary minerals
(c) primary minerals and secondary minerals
(d) secondary minerals and primary minerals

11 In the following figures the heat is transferred either from hand or to it,



Figure (1)

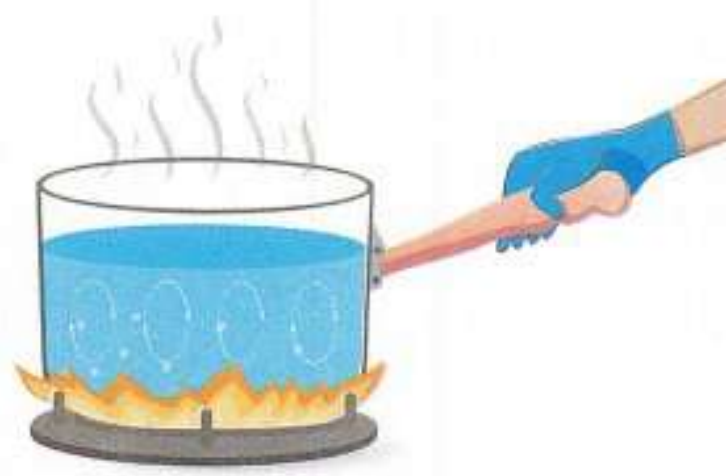


Figure (2)

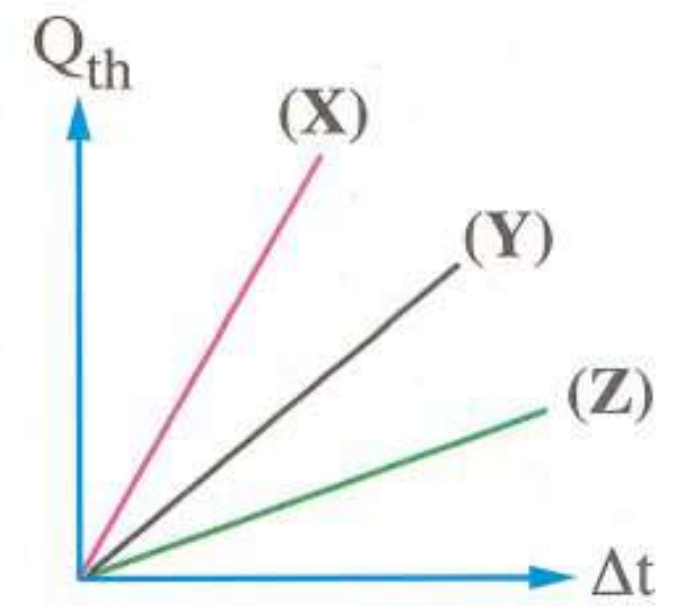


Figure (3)

In which figure the heat is transferred by conduction to the hand?

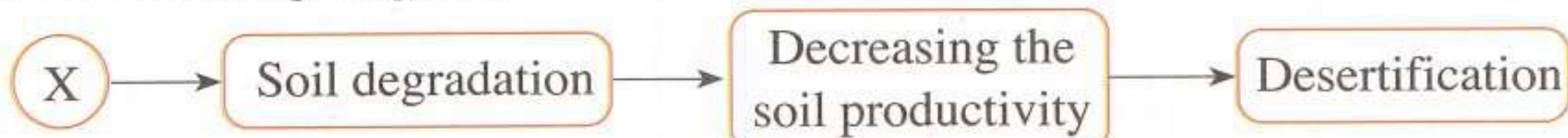
- (a) In figure (1). (b) In figure (2). (c) In figure (3). (d) In all figures.

- 12** The opposite graph represents the relation between the amount of heat (Q_{th}) that is gained by three equal masses of different substances (X), (Y) and (Z), and the rate of change in temperature (Δt) for each of them. So, the correct arrangement of the specific heat for the three substances is



- (a) $c_Z > c_Y > c_X$ (b) $c_X > c_Y > c_Z$
 (c) $c_X > c_Z > c_Y$ (d) $c_X = c_Y = c_Z$

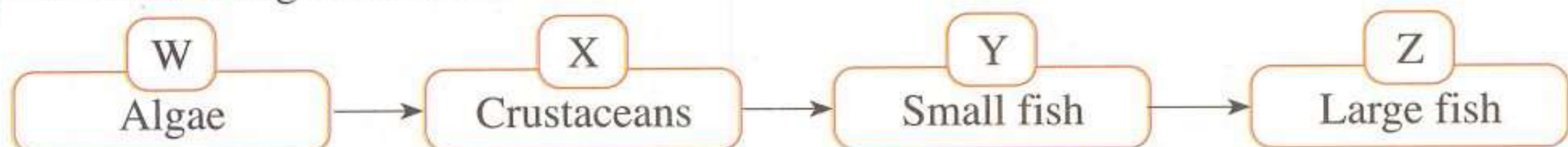
- 13** From the following diagram:



Which of the following represents (X)?

- (a) Variation in the cultivated crops. (b) Supplemental irrigation.
 (c) Using organic fertilizers. (d) Intensive soil cultivation.

- 14** In the following food chain:



All the following is considered a reason for the occurrence of an imbalance in this food chain, **except**

- (a) increasing the number of (W) and (X)
 (b) the predation of (Z) to (Y) by great numbers
 (c) increasing the number of (X)
 (d) the overfishing of (Z)

- 15** What happens to the transpiration rate in the plant, when the humidity level decreases in the atmosphere at the same temperature?

- (a) Increases. (b) Decreases.
 (c) Doesn't change. (d) The answer can't be determined.

- 16** Which of the following is considered an example of the behavioral adaptation in living organisms?

- (a) Sweat secretion in human. (b) Strong claws of predatory birds.
 (c) The hibernation of turtles. (d) The monkeys with long arms.

- 17** Although the solubility of CO_2 in water is higher than the solubility of O_2 in water, the percentage of O_2 gas in water exceeds the percentage of CO_2 in some aquatic environments. So, which of the following may be the reason for that?

- (a) The abundance of phytoplankton. (b) Increasing the industrial waste.
 (c) Increasing the number of dead fish. (d) Increasing the respiration rate of fish.

18 The following figure shows the molecular structure of two compounds, as hydrogen bonds are found among the molecules of compound (1), while being absent among the molecules of compound (2) despite of their similar structures. What is the reason for that?

- (a) The difference in the electronegativity between atoms (X) and (H) is higher.
- (b) The difference in the electronegativity between atoms (Y) and (H) is higher.
- (c) Molecule (1) is non-polar, while molecule (2) is polar.
- (d) The electronegativity of atom (X) is higher than that of atom (Y).



19 On performing liquid chromatography for water after being chemically treated by ozone, the appearance of a substance that is not found earlier before treating was observed. What do you expect the substance to be?

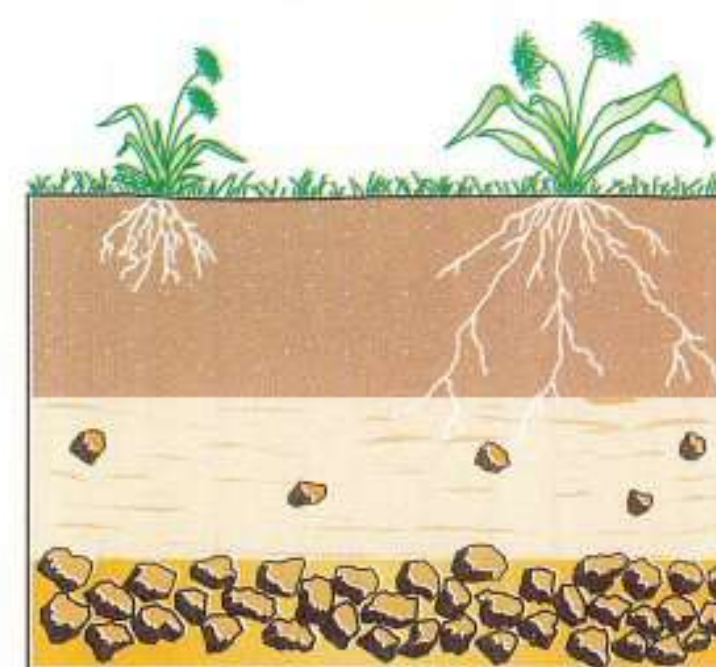
- (a) Organic substance.
- (b) Non-harmful substance.
- (c) Toxic substance.
- (d) Ozone.

20 Increasing the humidity level in the soil leads to

- (a) the difficulty of the plant roots respiration
- (b) increasing the gases level in the soil
- (c) decreasing the number of bacteria in the soil
- (d) increasing the soil temperature

21 The opposite figure shows a vertical section in the soil, this soil is formed by the effect of

- (a) the human activity
- (b) the capillarity phenomenon
- (c) weathering
- (d) organic fertilizers



22 A greenhouse gas whose molecule is formed from three identical atoms, this gas has practical applications, as

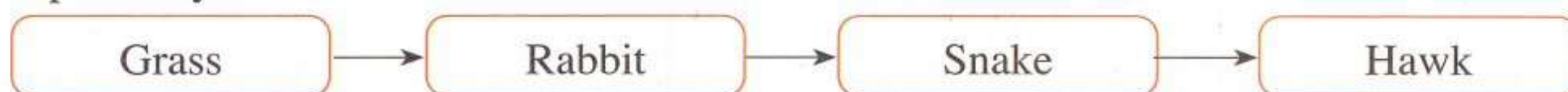
- (a) the chromatography
- (b) the spectroscopy
- (c) the absorption of organic substances
- (d) the oxidation of organic substances

23 Which of the following means is preferable to be used to face the effect of acid rain on soil?

- (a) The overuse of nitrogenous fertilizers.
- (b) The rotation in different crop cultivation.
- (c) The overuse of pesticides.
- (d) The usage of lime fertilizers.

- 24 Two identical quantities (1) and (2) of the same gas, if the temperature of quantity (1) is greater than that of quantity (2). So, the ratio between the effective velocity of the quantities molecules $\left(\frac{V_{rms}^1}{V_{rms}^2}\right)$ is
- (a) greater than 1 (b) less than 1 (c) equal to 1 (d) indeterminable

- 25 In the following food chain that is present in balanced ecosystem, what is the effect of increasing the number of rabbits on each of the amount of grass and the number of hawks respectively?



- (a) Increases / Decreases. (b) Increases / Increases.
 (c) Decreases / Increases. (d) Decreases / Decreases.

Answer the following questions (26 : 30):

- 26 How can the cellular membranes in the aquatic organisms that live in great depths help in bearing high pressure?

.....

- 27 What is the relation between the oceans' depletion and the loss of biodiversity in marine organisms?

.....

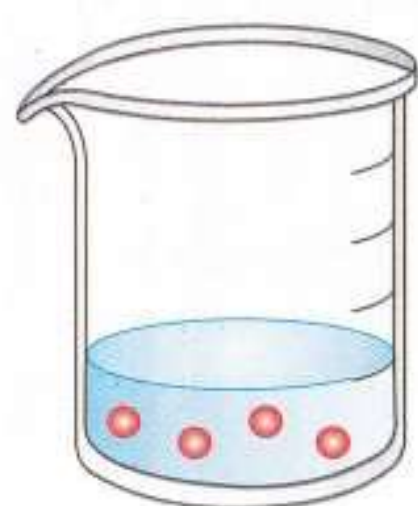
- 28 Give reason for: it is not advised to cultivate crops that need a lot of water in sandy soil.

.....

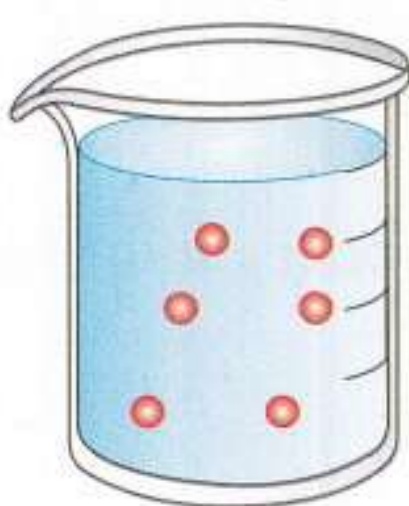
- 29 What is the effect of increasing the level of carbon dioxide gas in the atmosphere on the average temperature of Earth?

.....

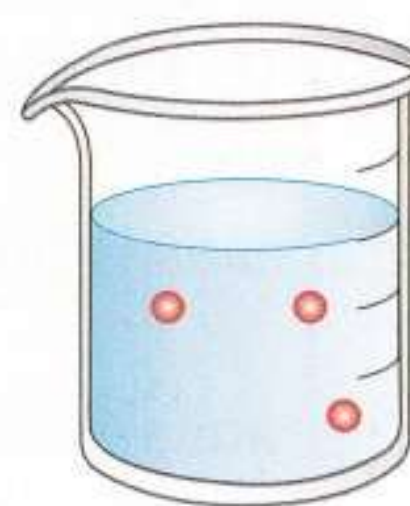
- 30 The following figures express 4 identical beakers, each of them contains a solution of different concentration for the same non-volatile solute at the same temperature. So, if the circles refer to the dissolved substance.



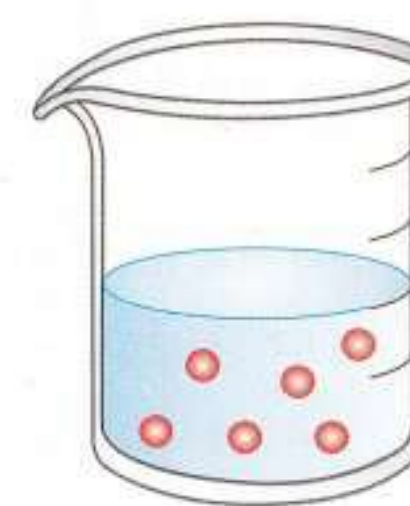
A



B



C



D

Which of these solutions has the highest boiling point? Explain your answer.

.....

Exam 5

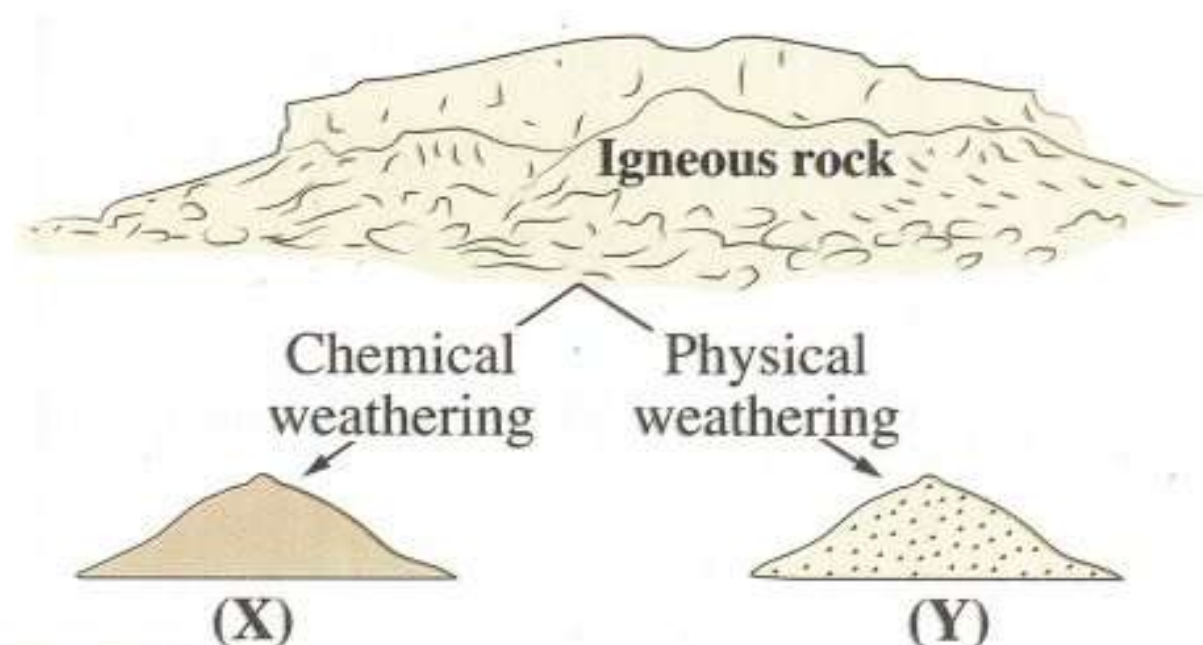


Answered

Choose the correct answer (1 : 25):

- 1 Which of the following could have a role in the extinction of some species of living organisms?
- (a) Energy flow through living organisms.
 - (b) The increase in greenhouse gases in the air.
 - (c) Establishing captive breeding programs.
 - (d) Protecting endangered predatory species.

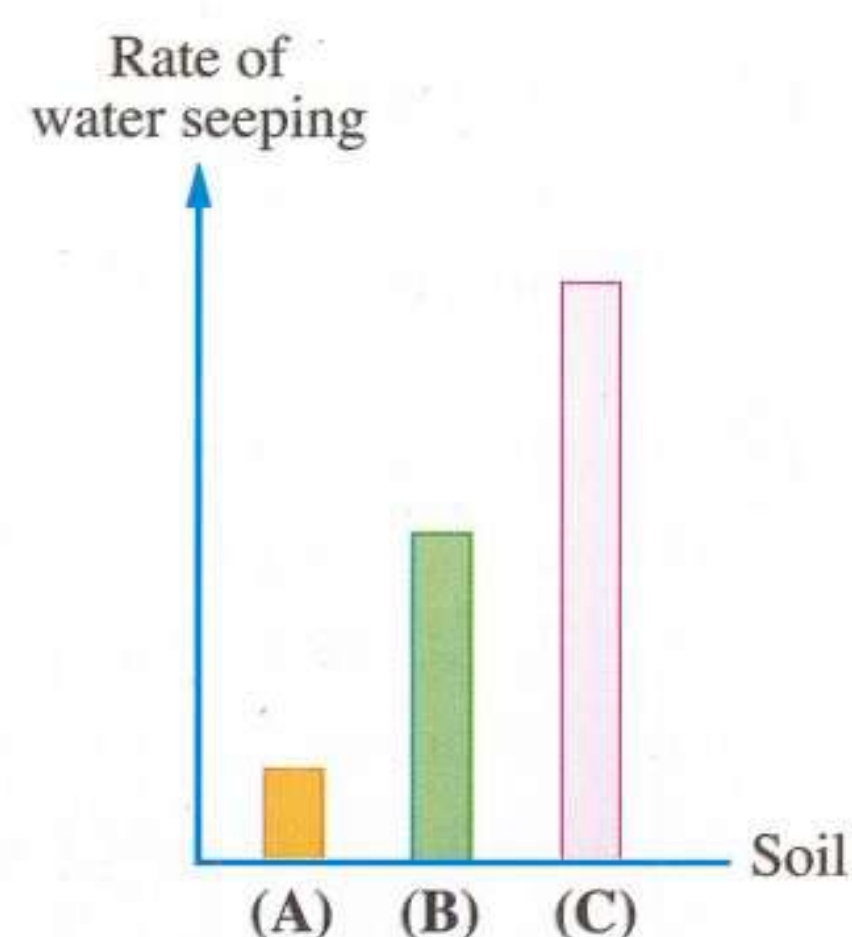
- 2 The opposite figure shows the effect of chemical and physical weathering on an igneous rock. Which of the choices in the following table is correct about the properties of minerals (X) and (Y)?



	(X)	(Y)
(a)	Has a non-uniform shape	Is more stable
(b)	Is more stable	Is coarse
(c)	Has a non-uniform shape	Has a non-uniform size
(d)	Is coarse	Has a non-uniform shape

- 3 The opposite figure shows the rate of water seeping through three different types of soil. What are the types of soil (A), (B) and (C)?

	(A)	(B)	(C)
(a)	Clay soil	Alluvial soil	Sandy soil
(b)	Sandy soil	Alluvial soil	Clay soil
(c)	Sandy soil	Clay soil	Alluvial Soil
(d)	Alluvial Soil	Clay soil	Sandy soil

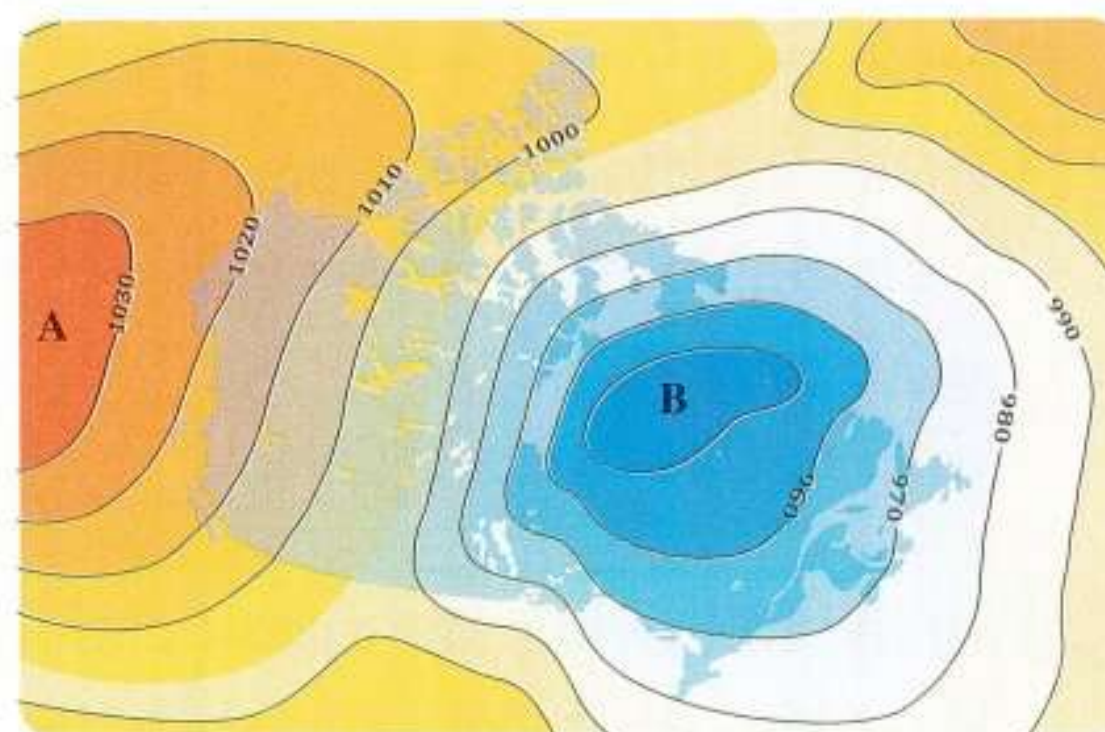


- 4 Which of the following is higher for pure water molecules at 1°C than at 4°C?
- (a) Vibration amplitude.
 - (b) Speed.
 - (c) Mass.
 - (d) Intermolecular spaces.

- 5** Increasing the concentration of CO_2 in water acts on
- increasing acidification and calcification
 - increasing acidification and reducing calcification
 - reducing acidification and increasing calcification
 - reducing acidification and calcification
-
- 6** Soil moisture can be retained in dry regions by the following, except
- improving water drainage
 - planting shade trees
 - repeatedly irrigating the soil by flooding
 - supplemental irrigation of the soil
-
- 7** In the hydrologic cycle, water can return to the sea through
- condensation or evaporation
 - condensation or streaming
 - rainfall or streaming
 - evaporation or rainfall
-
- 8** Which of the following organs in the body of Nile tilapia fish help(s) it to float?
- Kidneys.
 - Skin.
 - Gills.
 - Swim bladder.
-
- 9** Which of the following leads to a change in the chemical properties of limestone?
- Hitting of water currents with rocks.
 - The exposure of the rock to wind.
 - The exposure of the rock to acid rain.
 - The exposure of the rock to sandstorms.
-
- 10** The pH value of water increases when dissolving in it.
- carbon dioxide gas
 - sodium chloride salt
 - ammonium chloride salt
 - sodium bicarbonate salt
-
- 11** The following are the steps for the formation of ozone in the stratosphere:
- A single oxygen atom binds with an oxygen molecule.
 - The covalent bond between the two oxygen atoms in the oxygen molecule is broken down.
 - Shortwave ultraviolet radiation falls on an oxygen molecule.
- The correct order for these steps is
- I \longrightarrow II \longrightarrow III
 - III \longrightarrow II \longrightarrow I
 - III \longrightarrow I \longrightarrow II
 - I \longrightarrow III \longrightarrow II
-
- 12** Farmers in reclaimed lands fear the activity of the wind, because it causes the phenomenon of
- salinization
 - acidification
 - desertification
 - petrification

- 13 What happens to the volume of a quantity of pure water when its temperature is raised from 33°F to 39°F?
- (a) It increases. (b) It decreases.
(c) It decreases then increases. (d) It does not change.

- 14 The opposite figure represents the weather map for two regions (A) and (B), where the isobars indicate the air pressure values in millibars. So,



	The symbol used for region (A) on the weather maps is	Wind direction
(a)	L	A → B
(b)	L	B → A
(c)	H	A → B
(d)	H	B → A

- 15 Tropical rainforest trees contribute to all the following, except
- (a) increasing the activity of living organisms
(b) enhancing the respiration process
(c) regulating local and global climate
(d) soil erosion and degradation

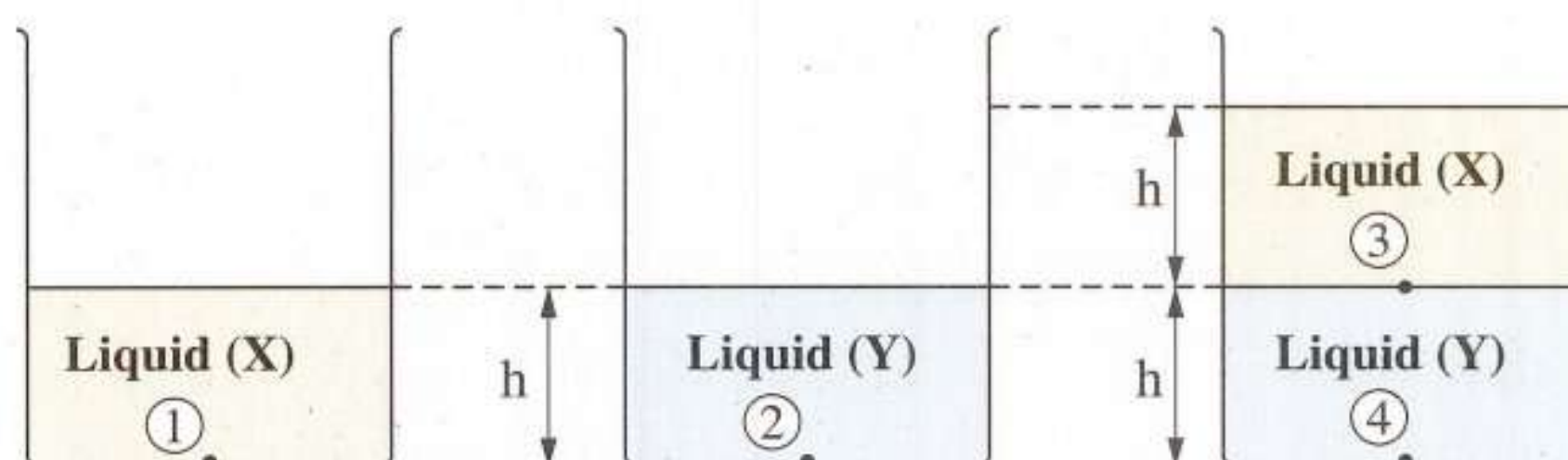
- 16 Which of the following is not one of the environmental protection practices?
- (a) Establishing natural reserves. (b) Reducing plastic consumption.
(c) Urban expansion. (d) Limiting coal usage.

- 17 Using filters to reduce acidic gas emissions from a factory near an agricultural area leads to
- (a) increasing agricultural and animal production
(b) raising the atmospheric temperatures
(c) decreasing rainfall rates
(d) decreasing calcium content in the soil

- 18 If the boiling point of a liquid is X°C at sea level and becomes Y°C on the top of a mountain, which of the following expresses the ratio $\frac{X}{Y}$?
- (a) It is greater than one. (b) It is equal to one.
(c) It is less than one. (d) It is indeterminable.

- 19 The technique that can be used to measure the percentages of harmful gases in air and that of heavy metals in the soil is
- (a) spectroscopy (b) liquid chromatography
(c) gas chromatography (d) wet chemical analysis

- 20** One of the reasons why polar bear is at the risk of extinction is
- (a) the increase in the ice cover
 - (b) the extreme cold at the north pole
 - (c) the destruction of its original habitat
 - (d) both (a) and (b)
-
- 21** In the life cycle of salmon, which of the following stages live(s) in an aquatic environment with high osmotic pressure?
- (a) Eggs only.
 - (b) Adult fish only.
 - (c) Eggs and young fish.
 - (d) Young fish and adult fish.
-
- 22** In the following, the specifications of four water samples, each of mass 1 kg. Two samples are of saltwater with the same concentration, and two samples are of freshwater, which of these samples has the highest density?
- (a) Saltwater sample at 4°C
 - (b) Freshwater sample at 4°C
 - (c) Saltwater sample at 8°C
 - (d) Freshwater sample at 8°C
-
- 23** Which of the following statements is correct about iron as one of the minerals that found in the Earth's crust?
- (a) A limited resource that decreases with consumption.
 - (b) A limited resource that isn't affected by consumption.
 - (c) An available resource that decreases with consumption.
 - (d) An available resource that isn't affected by consumption.
-
- 24** The temperature increases in the upper part of the stratosphere as ascending upwards due to the higher concentration of
- (a) oxygen gas
 - (b) nitrogen gas
 - (c) argon gas
 - (d) ozone gas
-
- 25** Three containers, each containing a quantity of liquid or two immiscible liquids are represented by the following figures:



So, the correct order of pressures at points 1, 2, 3 and 4 that shown in the figures is:

- (a) $P_4 > P_3 = P_2 > P_1$
- (b) $P_4 > P_3 > P_2 = P_1$
- (c) $P_4 > P_2 > P_1 = P_3$
- (d) $P_4 = P_2 = P_1 > P_3$

Answer the following questions (26 : 30):

26 Explain: increasing the number of red blood corpuscles for people who live in mountaintops.

.....

.....

27 Gulf stream is considered an example for the effect of the solar radiation on water currents in the Atlantic Ocean. **Explain this.**

.....

.....

28 **What** is the effect of using biopesticides with respect to the agricultural soil fertility?

.....

.....

29 Human poisoning by mercury doesn't always include breathing its vapor, but the poisoning can take place through having food. **Give one example for this.**

.....

.....

30 **What** is the effect of discharging the water polluted with agricultural fertilizers in a water body on the number of algae?

.....

.....

Answers of General Exams

Answers of Exam 1

Question no.	1	2	3	4	5	6	7	8	9	10
Answer	a	b	d	c	b	d	b	d	c	d

Question no.	11	12	13	14	15	16	17	18	19	20
Answer	a	c	d	d	d	c	b	c	a	b

Question no.	21	22	23	24	25	26:30
Answer	c	a	d	a	b	Answer by yourself

Answers of Exam 2

Question no.	1	2	3	4	5	6	7	8	9	10
Answer	b	d	a	c	b	d	b	a	a	b

Question no.	11	12	13	14	15	16	17	18	19	20
Answer	c	d	a	c	b	c	a	c	a	c

Question no.	21	22	23	24	25	26:30
Answer	a	c	c	d	c	Answer by yourself

Answers of Exam 3

Question no.	1	2	3	4	5	6	7	8	9	10
Answer	a	b	a	d	b	c	a	b	c	d

Question no.	11	12	13	14	15	16	17	18	19	20
Answer	b	a	b	c	c	b	b	c	a	a

Question no.	21	22	23	24	25	26:30
Answer	a	c	c	b	c	Answer by yourself

Answers of Exam 4

Question no.	1	2	3	4	5	6	7	8	9	10
Answer	a	a	a	c	b	b	c	b	d	c

Question no.	11	12	13	14	15	16	17	18	19	20
Answer	b	b	d	a	a	c	a	b	b	a

Question no.	21	22	23	24	25	26:30
Answer	c	d	d	a	c	Answer by yourself

Answers of Exam 5

Question no.	1	2	3	4	5	6	7	8	9	10
Answer	b	b	a	d	b	c	c	d	c	d

Question no.	11	12	13	14	15	16	17	18	19	20
Answer	b	c	b	c	d	c	a	a	a	c

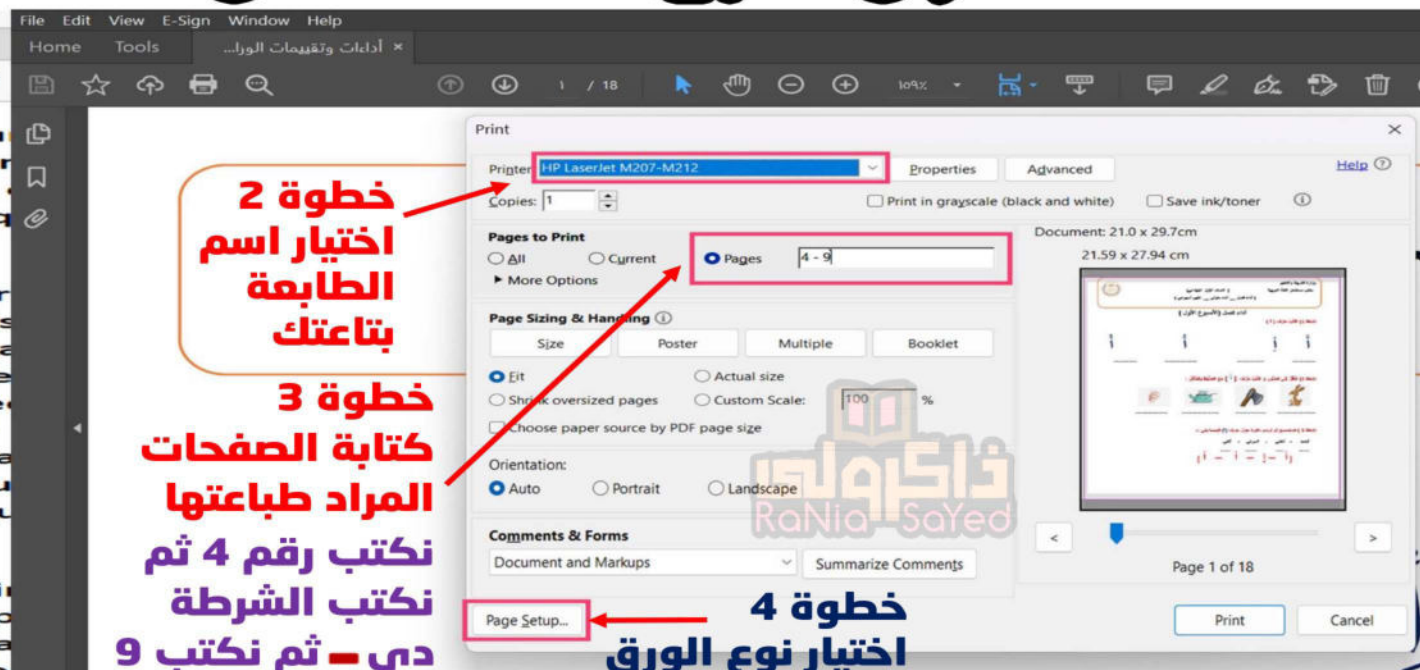
Question no.	21	22	23	24	25	26:30
Answer	b	a	a	d	c	Answer by yourself

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



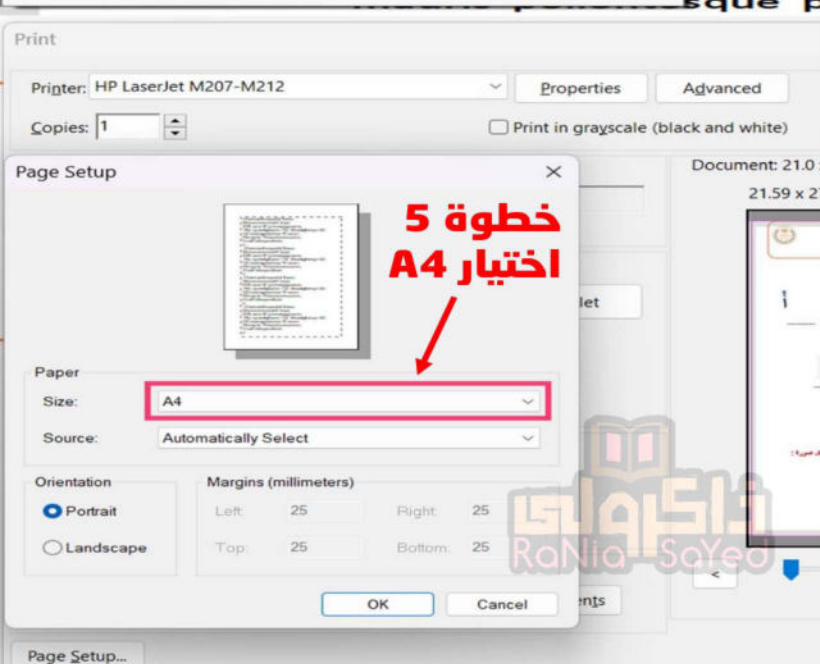
خطوة 1



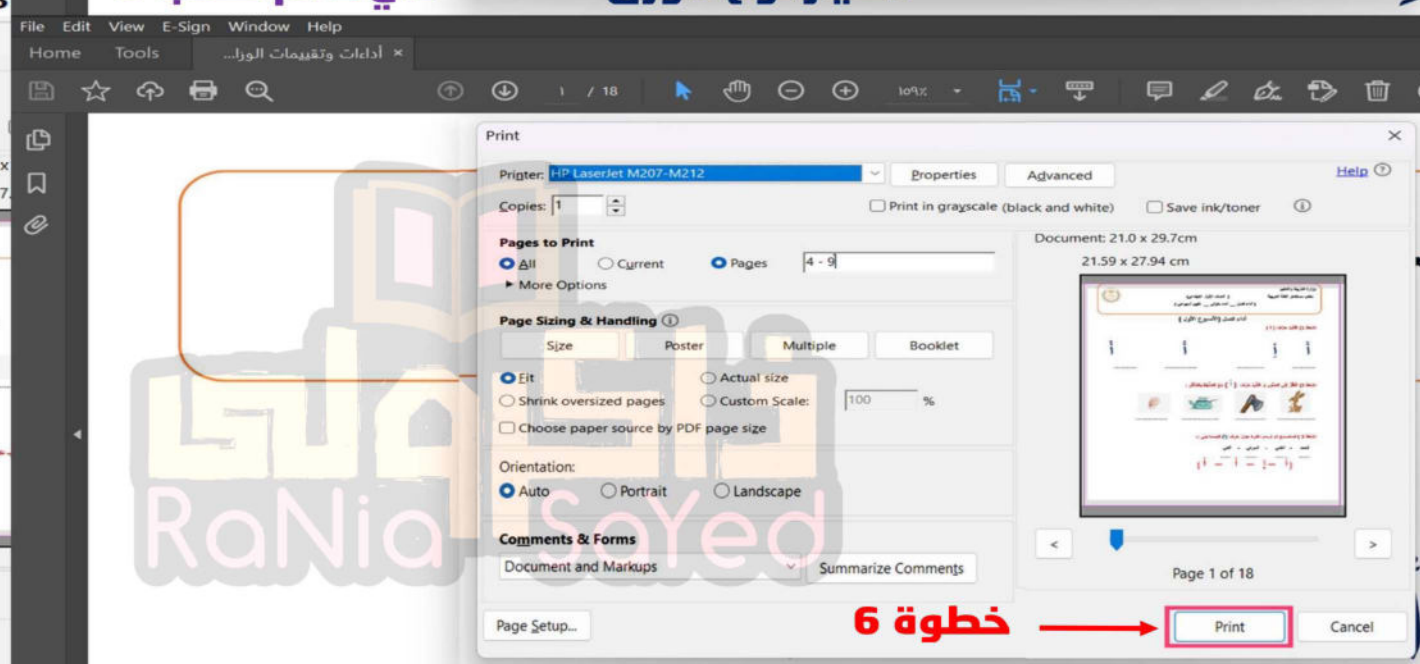
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6

حمل الآن

مجاناً وحصرياً

امتحانات رقم (2)

الترم الاول





The questions marked with **1** are answered with an explanation

First Multiple Choice

1

The efforts to replant the Amazon forests are an example of:

- (a) Captive breeding programs
- (b) Awareness and education programs
- (c) Rehabilitation of natural habitats
- (d) Laws and legislation

2

Which of the following options represents the smallest component of the soil?

- (a) Minerals
- (b) Organic matter
- (c) Water
- (d) Gases

3

Which of the following soil layers is the least affected by erosion?

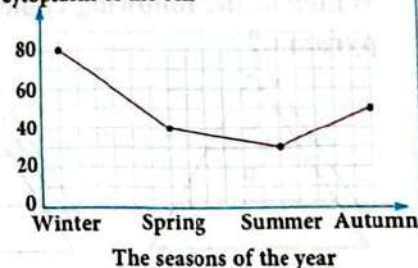
- (a) Topsoil
- (b) Subsoil
- (c) Above the parent rock
- (d) Parent rock

4

The graph below shows the amount of glucose in the cytoplasm of one organism's cells. Study it carefully, and then deduce: Which regions of the globe could these organisms live in?

- (a) The temperate aquatic region
- (b) The polar frozen region
- (c) Tropical forest region
- (d) Desert region

The amount of glucose in the cytoplasm of the cell



5

If the air temperature is 10°C , what is the equivalent temperature in Fahrenheit?

- (a) 20°F
- (b) 32°F
- (c) 42°F
- (d) 50°F

6

Which of the following organs are directly affected by exposure to heavy metals like lead?



(a)



(b)



(c)



(d)

7

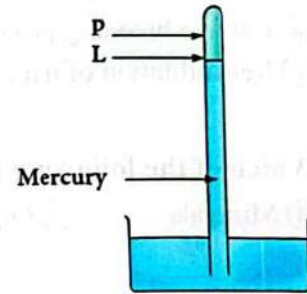
When comparing the function of a greenhouse in agriculture with the greenhouse effect phenomenon, which of the following options could represent the glass in the greenhouse?

- (a) Plants
- (b) Soil
- (c) The atmosphere
- (d) Sunlight

8

The diagram shows a mercury barometer placed at the foot of the mountain. What happens to the mercury level L and the pressure at point P inside the barometer as the barometer is taken to the top of the mountain?

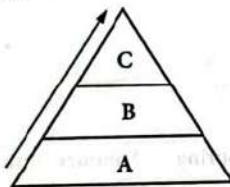
	Mercury level L	Pressure at point P
(a)	Decreases	Decreases
(b)	Increases	Decreases
(c)	Decreases	Remains the same
(d)	Increases	Remains the same



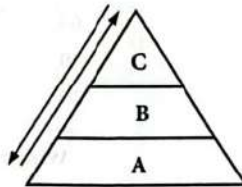
9

Here are several threatening factors to the marine food pyramid:

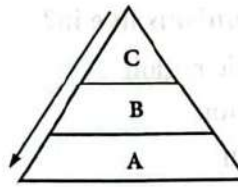
Which of the following choices correctly represents the flow of energy within the pyramid?



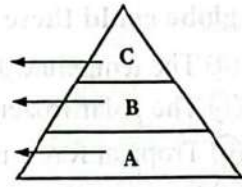
(a)



(b)



(c)



(d)

10

Which of the following factors poses a significant threat to ecological balance?

- (a) Organic farming
- (b) Renewable energy
- (c) Industrial pollution
- (d) Recycling waste

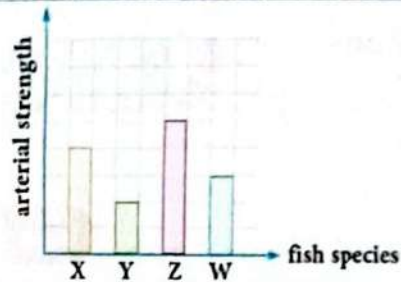
11

Which of the following water types can be acidic, neutral, or basic?

- (a) Saltwater
- (b) Freshwater
- (c) Groundwater
- (d) Falling from the clouds

12 The following graph shows the arterial strength in four different types of fish. Study it carefully, then deduce: which letter represents the type of fish that lives at the greatest depth in the ocean?

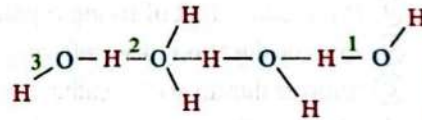
- (a) X (b) Y
(c) Z (d) W



13 Which of the following phenomena could be affected by any disturbance in the ionosphere layer?

- (a) Clouds, winds, and thunderstorms. (b) The Earth's rotation around its axis during the day
(c) Satellites used in communications. (d) Surface wind movement in the atmosphere

14 The following diagram shows the types of bonds in water molecules by numbers (1), (2), (3). Which of the following correctly identifies these bonds?



- (a) (1) Covalent, (2) Hydrogen, (3) Ionic
(b) (1) Covalent, (2) Hydrogen, (3) Covalent
(c) (1) Coordinate, (2) Hydrogen, (3) Ionic
(d) (1) Covalent, (2) Hydrogen, (3) Metallic

15 The spiny lizard can adapt to high temperatures because it:

- (a) Secretes antifreeze proteins (b) Absorbs moisture from the sand
(c) Produces large amounts of glucose (d) Stores large amounts of water

Second Essay Questions

16 Explain: Why does the heart of the wood frog stop beating in winter in Northern Europe?

17 100 grams of copper (with a specific heat of $0.39 \text{ J/g}\cdot\text{K}$) were mixed with 200 grams of aluminum (with a specific heat of $0.90 \text{ J/g}\cdot\text{K}$) at room temperature (20°C). The mixture was heated until its temperature reached 100°C . What is the amount of heat required for that?

18 Based on your study: What is the factor that causes some organisms to move from deep waters to shallow waters?



The questions marked with **1** are answered with an explanation

First

Multiple Choice

- 1 What does an increase in biodiversity of living organisms mean?
- (a) Numbers (b) Species (c) Sizes (d) Masses

- 2 Observing an increase in the thickness of the vertical section of the soil indicates all of the following except
- (a) Increased effect of living organisms
(b) Longer duration of weathering effects on the original rock
(c) Shorter duration of weathering effects on the original rock
(d) Strong influence of the original rock by climate factors

- 3 The image shows a type of eagle that was removed from the endangered species list in 2007. Based on this: Which of the following strategies played the biggest role in protecting these animals from extinction?
- (a) Captive breeding programs (b) Establishing natural reserves
(c) The issuance of law and legislation (d) Restoring natural habitats

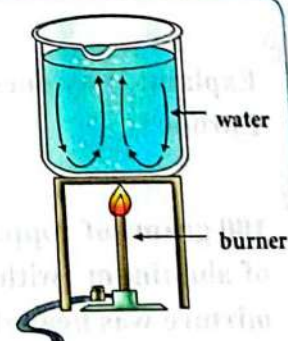


- 4 The diagram shows heating of a container filled with water. The upward movement of water molecules inside the container is due to:

- 1- Heat transfer by conduction from the flame to the bottom of the container
- 2- The formation of convection currents of water molecules inside the container
- 3- Heat transfer by radiation from the flame to the water molecules in the container.

Which of the above statements is correct?

- (a) (1, 2) (b) (2, 3)
(c) (2) only (d) (1, 2, 3)

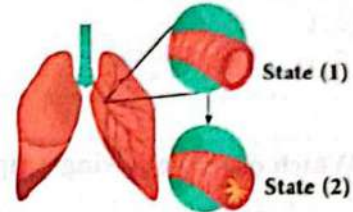


6 Assuming gas (X) is part of Earth's atmosphere, what is the value of V_{rms} for this gas?

- (a) 11.2 km/s
- (b) 12.2 km/s
- (c) 9.2 km/s
- (d) 19.2 km/s

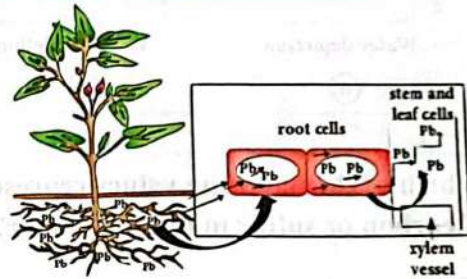
7 Which of the following factors leads to the transformation of a person's lungs from state (1) to state (2) as shown in the figure?

- (a) Pesticides
- (b) Air polluted with ozone
- (c) Lead compounds
- (d) Benzene



8 Which of the following represents the source of pollution shown in the accompanying image?

- (a) Pesticides
- (b) Volatile organic compounds
- (c) Heavy metals
- (d) Insecticides

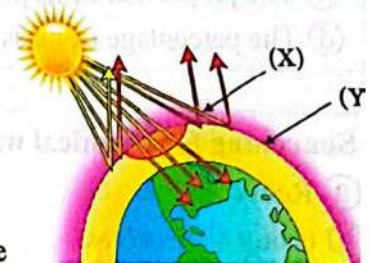


9 If the allowable chlorine level used in drinking water treatment is 250 mg/L of water, and upon testing the sample, the chlorine content was found to be 0.25 grams/L. Which of the following procedures would you use next?

- (a) Conduct chemical treatment
- (b) Conduct spectroscopic analysis
- (c) Use the water for household purposes
- (d) Store the water for a long time

10 Study the accompanying image, which shows the role of one of the atmospheric layers: What can represent (X) and (Y) in the figure?

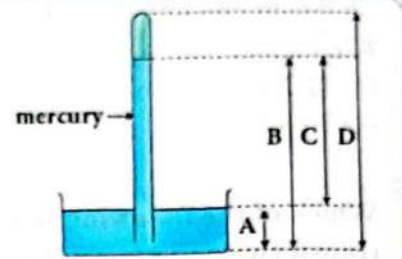
- (a) (X) Radio waves, and (Y) Ionosphere
- (b) (X) Solar radiation, and (Y) Mesosphere
- (c) (X) Long-wavelength ultraviolet rays, and (Y) Stratosphere
- (d) (X) Short-wavelength ultraviolet rays, and (Y) Stratosphere



10

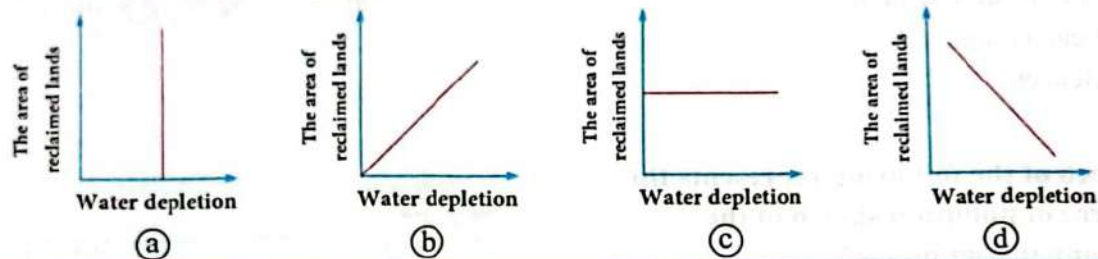
The accompanying image shows a mercury barometer. Which of the elevations indicates the atmospheric pressure value?

- (a) A
- (b) B
- (c) C
- (d) D



11

Which of the following graphs is scientifically correct?



12

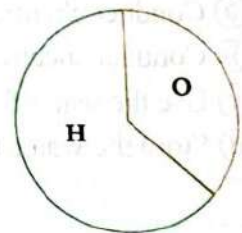
Which of the following values represents the pH produced by dissolving some oxides of carbon or sulfur in distilled water?

- (a) 5
- (b) 7
- (c) 7.5
- (d) 8.4

13

Study the diagram carefully and then answer:
What describes the relation between the components of the water molecule in the diagram?

- (a) The number of atoms that make it up
- (b) The proportion of its presence in the atmosphere
- (c) The proportion of its presence in the hydrosphere
- (d) The percentage of mass it is composed of

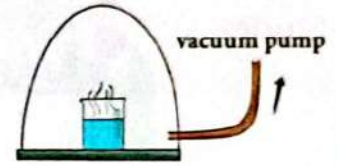


14

Searching for chemical waste to extract valuable metals like gold is an example of

- (a) Recycling.
- (b) Using alternatives.
- (c) Consumption reduction.
- (d) Exporting products

- 15 Study the diagram that shows a cup placed inside a vessel with a hole that draws out air, then answer:
What role does the vacuum pump play in this experiment?



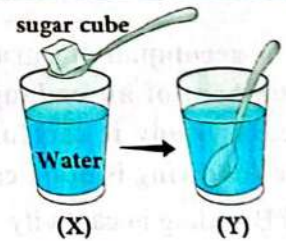
- (a) Decreasing pressure
- (b) Increasing pressure
- (c) Reducing the volume of water
- (d) Increasing water evaporation

Second Essay Questions

- 16 Explain: The wood frog produces large amounts of glucose in its vital organs at the beginning of winter.

- 17 Study the image carefully and answer:

- (1) In which of the two cases is the boiling point of the liquid higher? Explain.
- (2) In which of the two cases is the freezing point of the liquid higher?



- 18 What is your explanation for the ability of salmon to transition between different environments?



The questions marked with are answered with an explanation

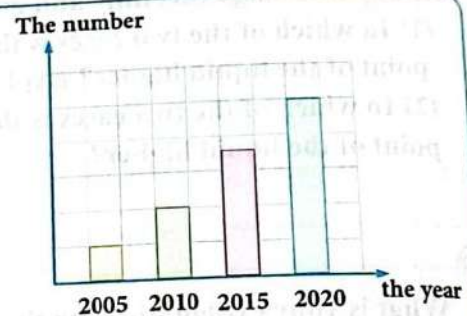
First

Multiple Choice

1 Soil that is characterized by increased spaces between its deposits has a water drainage rate of

- (a) Low
- (b) Moderate
- (c) High
- (d) Variable

2 The accompanying graph shows the change in the numbers of an endangered animal over several years. Study it carefully and deduce: Which of the following is not a cause of this change?



- (a) Breeding in captivity
- (b) Development of hunting weapons
- (c) Establishment of natural reserves
- (d) Rehabilitation of habitats

3 Which of the following reasons may lead to a decrease in soil nutrients?

- (a) Soil contamination with heavy metals
- (b) No-till farming
- (c) Using nitrate compounds
- (d) Monoculture farming

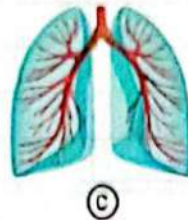
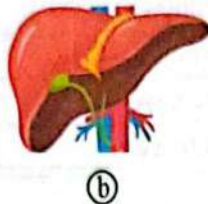
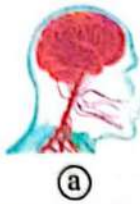
4 The temperature in your city is recorded at 30°C. How would you inform your American friend in a way they would better understand?

- (a) 273° Kelvin
- (b) 308° Kelvin
- (c) 95° Fahrenheit
- (d) 30° Fahrenheit

5 Which of the following behaviors contributes to increasing the problem of global warming?

- (a) Planting trees in streets
- (b) Increasing the number of private electric cars
- (c) Reducing the number of jet planes
- (d) Increasing the number of private non-electric cars

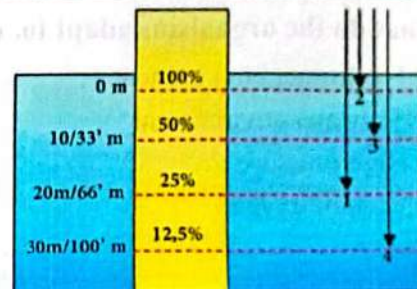
- 6 Which of the following organs is most affected when heavy metal pollutants enter the body?



- 7 The adjacent diagram shows a schematic of four monochromatic light rays penetrating the surface of water to a certain depth.

The correct order of the wavelengths for the four rays is.....

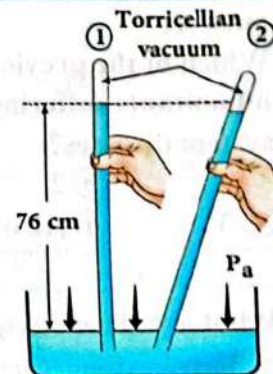
- (a) $\lambda_1 > \lambda_2 > \lambda_3 > \lambda_4$
(b) $\lambda_4 > \lambda_1 > \lambda_3 > \lambda_2$
(c) $\lambda_4 > \lambda_2 > \lambda_3 > \lambda_1$
(d) $\lambda_2 > \lambda_3 > \lambda_1 > \lambda_4$



- 8 The adjacent diagram represents a mercury barometer when the tube was in a perfectly vertical position as in position (1), with the height of the mercury column inside the barometer tube being 76 cmHg.

If the tube is tilted as in position (2), what is expected to happen regarding both the height of the mercury column inside the tube and the size of the Torricellian vacuum, respectively?

- (a) Increases – Decreases
(b) No change – Decreases
(c) Increases – Increases
(d) Decreases – Increases



- 9 How can changes in escape velocity affect the composition of Earth's atmosphere?

- (a) Increasing escape velocity allows Earth to retain more light gases
(b) Decreasing escape velocity causes heavy gases to escape
(c) Increasing escape velocity prevents Earth from retaining any gas
(d) Decreasing escape velocity allows light gases like hydrogen and helium to escape

10

What is the result of dissolving ammonium chloride salt in water?

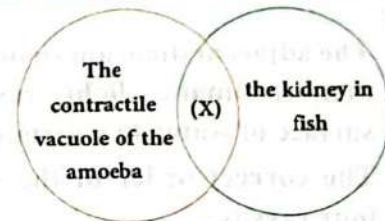
	Hydrogen ion concentration	Hydroxide ion concentration
(a)	Decreases	Decreases
(b)	No change	No change
(c)	Increases	Decreases
(d)	Decreases	Increases

11

Study the opposite diagram, and then identify:

What do the organisms adapt to, represented by (X)?

- (a) Freshwater environment
- (b) Saltwater environment
- (c) High pressure
- (d) Lack of oxygen

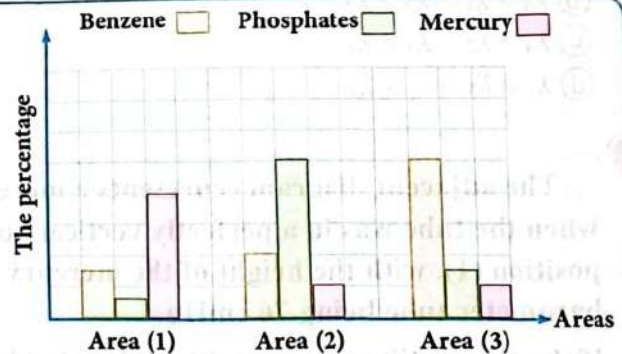


12

Study the opposite graph, which represents the percentages of the presence of certain materials in three different residential areas, then answer:

Which of the previous areas are its inhabitants suffering from nervous system diseases?

- (a) 1
- (b) 2
- (c) 3
- (d) All of the above areas



13

What are the consequences of ozone layer depletion in the stratosphere?

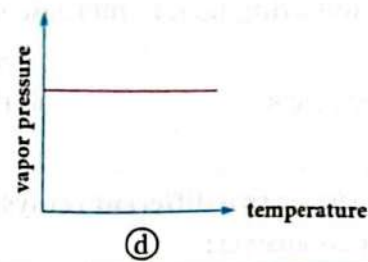
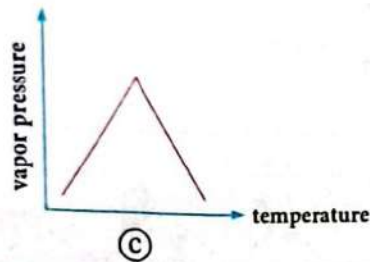
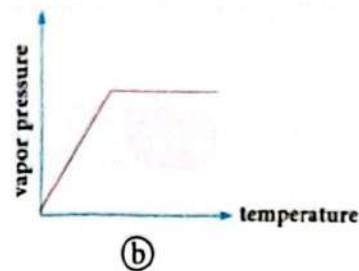
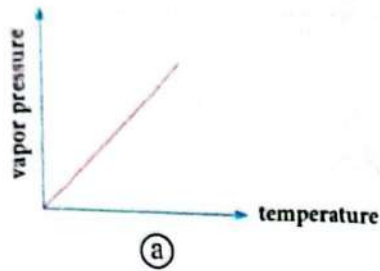
- (a) Increased concentration of oxygen in the atmosphere
- (b) Rising Earth's temperature
- (c) Increased risk of exposure to ultraviolet radiation
- (d) Reducing air pollution

14

Which process does not occur before condensation in cloud formation?

- (a) Transpiration in plants
- (b) Seepage into soil pores
- (c) Respiration in plants
- (d) Respiration in animals

- 15 Which graph represents the relation between the vapor pressure of a liquid in a closed container and temperature?



Second Essay Questions

- 16 What causes: the high amount of proteins in the blood plasma of ice fish during winter?

- 17 Explain why: pure water boils at approximately 70°C on top of Mount Everest.

- 18 Study the table below, which shows the humidity percentage and air temperature in 4 different regions, then conclude:

Region	Average Humidity (%)	Average Temperature ($^{\circ}\text{C}$)
(W)	75% - 90%	25°C - 30°C
(X)	10% - 30%	35°C - 45°C
(Y)	50% - 70%	10°C - 20°C
(Z)	60% - 80%	-20°C - 0°C

- (1) Which letter represents the region where tropical plants and animals thrive at a higher rate?
- (2) Which letter represents a region describing a desert environment in Egypt?



First

Multiple Choice

1

Which of the following factors increase soil hardness?

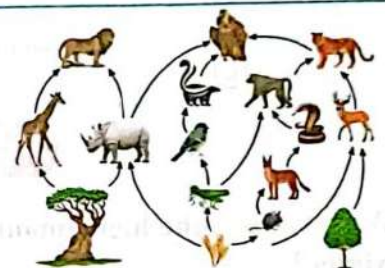
- (a) Capillarity (b) Soil compaction
(c) Nitrogen fertilizers (d) Biopesticides

2

The diagram shows two different ecosystems. Study it carefully, then answer:

What can be concluded from studying the diagram?

- (a) Diseases are more widespread in ecosystem (X).
(b) Ecosystem (Y) is more stable than ecosystem (X).
(c) Different ecosystems are separate from each other.
(d) Different ecosystems are connected to each other.



The system (Y)

The system (X)

3

From the diagram: What process is represented by symbol (A)?

- (a) Physical weathering (b) Chemical weathering
(c) Mineral crystallization (d) Mineral melting

Secondary minerals

Primary minerals

A

4

At what temperature do both Celsius and Fahrenheit scales give the same reading?

- (a) $-40\text{ }^{\circ}\text{C}$ (b) $40\text{ }^{\circ}\text{C}$ (c) $273\text{ }^{\circ}\text{C}$ (d) $574\text{ }^{\circ}\text{C}$

5

Study the table below, which shows the conditions suitable for the growth of some plants, then answer:

Which of the following plants is suitable for cultivation in the tropical rainforest?

- (a) X
(b) Y
(c) W
(d) L

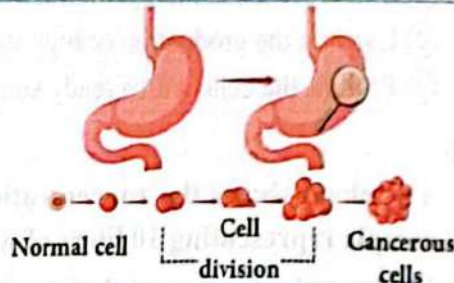
Plant	Heat	Humidity
X	High	High
Y	Low	Low
W	High	Low
L	Low	High

6 Which of the following equations represents the reaction of ozone formation in the stratosphere?

- (a) $O_2 \rightarrow O_3$ (b) $O + O_2 \rightarrow O_3$ (c) $O_3 \rightarrow O_2 + O$ (d) $O + O_3 \rightarrow O_2$

7 Study the diagram that shows changes in the stomach. What chemicals cause this?

- (a) Activated carbon
(b) Smog
(c) Formaldehyde
(d) Formalin



8 Study the table showing the two traits of oxygen and carbon dioxide. Which of the following corresponds to traits (A) and (B)?

Trait (A)	$CO_2 < O_2$
Trait (B)	$CO_2 > O_2$

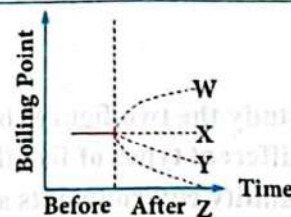
	(A)	(B)
(a)	Concentration in air	Concentration in water
(b)	Concentration in water	Concentration in air
(c)	Concentration in air	Solubility in water
(d)	Solubility in water	Concentration in air

9 The pressure at a point inside a liquid depends on.....

- (a) Liquid density only (b) Depth only
(c) Type of liquid only (d) Both density and depth

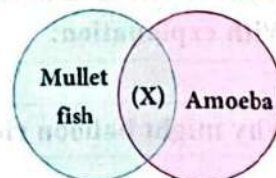
10 Study the diagram: Which of the following represents the change caused by adding 25 grams of sodium chloride to 200 ml of pure water over time?

- (a) (W) (b) (X)
(c) (Y) (d) (Z)



11 From the schematic diagram: Which of the following could represent (X)?

- (a) Cellular respiration
(b) Gas exchange organ
(c) Body complexity
(d) Osmoregulation methods



12 Water passes through the cell membranes into the plant cells shown in order to:

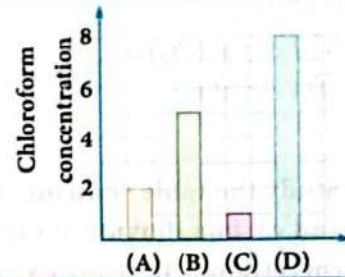
- (a) Eliminate waste
- (b) Lower the plant's temperature.
- (c) Use it in the production of high-energy compounds.
- (d) Provide the cells with a ready source of energy.



13 The chart shows the concentration of chloroform in a sample representing 10 liters of water.

What method was used that resulted in the concentration (C) seen in the chart?

- (a) Activated carbon
- (b) Ozone
- (c) Bacteria
- (d) Recycling of waste

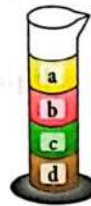


14 What type of bonds are present between H_2O molecules but not present between H_2S molecules?

- (a) Covalent
- (b) Ionic
- (c) Peptide
- (d) Hydrogen

15 The diagram shows a graduated cylinder with four different liquids. Based on their densities, where is the canola oil located?

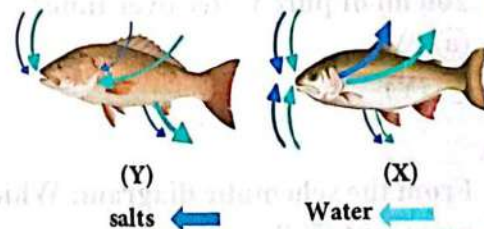
- (a) a
- (b) b
- (c) c
- (d) d



Liquid	Density (g/ml)
Corn syrup	1.38
Ether	1.2
Canola oil	0.93
Saltwater	1.1

Second Essay Questions

16 Study the two figures below, which show two different types of fish that live in different salinity environments and adapt to them. Then answer: What is the concentration of urine produced in each of the two fish (X) and (Y)? With explanation:



17 Why might balloon riders experience nosebleeds sometimes?

18 How can air pollution affect plants?



The questions marked with  are answered with an explanation

First

Multiple Choice

1

What is the type of soil that retains the most water?

(a) Clay

(b) Sandy

(c) Gravelly

(d) Coarse

2

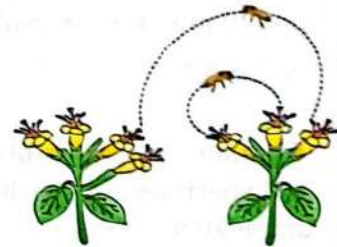
Which of the following describes the process depicted in the opposite image correctly?

(a) Insects help the plant to transport seeds.

(b) The opposite process increases the number of the plant's leaves.

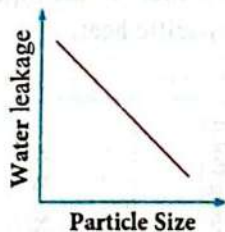
(c) Biodiversity contributes to reducing the reproduction of plants.

(d) Insects help the plant to transport pollen grains.

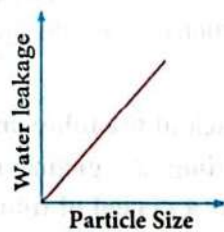


3

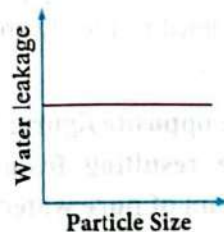
Which graph correctly represents the relation between soil particle size and water leakage?



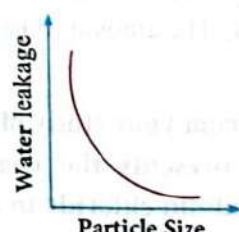
(a)



(b)



(c)



(d)

4

If the temperature of an object is 50 degrees Fahrenheit, what is the value of this temperature on the Celsius scale?

(a) 20 degrees Celsius

(b) 10 degrees Celsius

(c) 30 degrees Celsius

(d) 40 degrees Celsius

5 What is the potential effect of increased carbon dioxide concentration in the atmosphere on the marine ecosystem?

- (a) Improvement of photosynthesis in marine plants and increased growth.
- (b) Increased acidity of oceans, negatively affecting marine life.
- (c) Increased oxygen levels in seas and oceans.
- (d) Reduced heat absorption in oceans, leading to cooler waters.

6 Which of the following reactions leads to the destruction of ozone by nitrogen oxides?

- (a) $\text{NO} + \text{O}_3 \rightarrow \text{NO}_2 + \text{O}_2$
- (b) $\text{NO}_2 + \text{O} \rightarrow \text{NO} + \text{O}_2$
- (c) $\text{NO}_2 + \text{O}_3 \rightarrow \text{NO} + \text{O}_2$
- (d) $\text{NO} + \text{O}_2 \rightarrow \text{NO}_2$

7 Which of the following compounds are volatile compounds that cause chemical pollution in the atmosphere?

- (a) Chlordane
- (b) Chloroform
- (c) Cadmium compounds
- (d) Pesticides

8 The following figure illustrates the steps of an experiment in which 2 liters of a liquid are heated.

Study the figure and then answer:

What can be concluded when measuring the temperatures in the three steps?



Two minutes after heating



One minute after heating

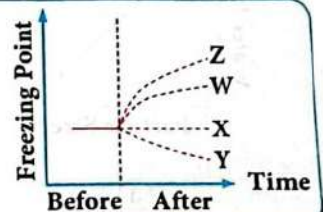


Before heating

- (a) As heating time increases, the change in temperature decreases.
- (b) The amount of heat gained is directly proportional to the change in temperature.
- (c) The amount of heat gained is directly proportional to the change in the mass of the liquid.
- (d) The amount of heat gained is directly proportional to the change in specific heat.

9 From your study of the opposite figure: Which of the following represents the change resulting from adding 25 grams of sodium chloride to 200 ml of pure water over a period of time?

- (a) (W)
- (b) (X)
- (c) (Y)
- (d) (Z)



10 Study the opposite figure and then answer: Which of the following does not play a role in regulating respiration in this organism?

- (a) Reducing the metabolic rate
- (b) Presence of large gills
- (c) Presence of fine capillaries
- (d) Presence of strong arteries and veins



11 What is the result of dissolving sodium chloride in water?

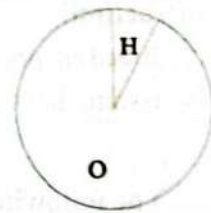
	Hydrogen Ion Concentration	Hydroxide Ion Concentration
(a)	Decreases	Decreases
(b)	Does not change	Does not change
(c)	Increases	Decreases
(d)	Decreases	Increases

12 Building houses on agricultural land to accommodate the increasing population in Egypt is called.....

- (a) Loss of biodiversity (b) Desertification (c) Soil erosion (d) Urban expansion

13 What does the figure represent regarding the components of a water molecule?

- (a) Number of constituent atoms
(b) Percentage presence in the atmosphere
(c) Percentage presence in the water body
(d) Percentage mass composing it



14 Which of the following is one of the main causes of air pollution?

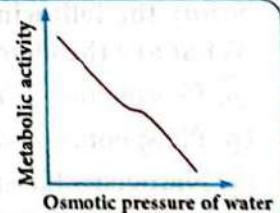
- (a) Mercury (b) Chloroform (c) Chlordane (d) Lead

15 One of the main features of activated carbon is that it absorbs.....

- (a) Organic materials and biological pollutants
(b) Organic materials and chemical pollutants
(c) Inorganic materials and biological pollutants
(d) Inorganic materials and chemical pollutants

Second Essay Questions

16 Study the graph shown and then conclude: Which organism is represented by the accompanying graph? Explain your answer.



17 Explain: Why is there no hemoglobin in the blood of icefish?

18 In light of your studies, how does afforestation contribute to reducing global warming?



First

Multiple Choice

1

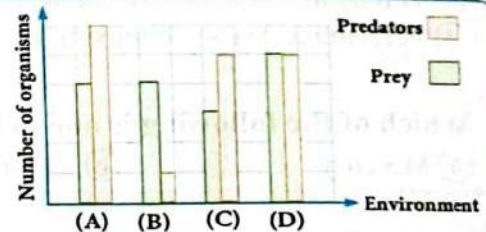
The increase in the numbers of the southern white rhinoceros after it was nearly extinct is considered evidence of the success of biodiversity conservation strategies. Which of the following strategies played the biggest role in protecting it from extinction?

- (a) Breeding programs in captivity (b) Establishing natural reserves
(c) Issuing laws and regulations (d) Restoring natural habitats

2

The following graph shows the relation between the number of prey species and predators in four different environments. Study it carefully, then conclude: Which of the four environments is the most stable?

- (a) A (b) B (c) C (d) D



3

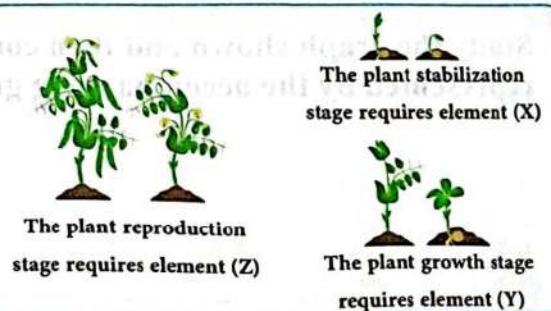
Which of the following effects is a direct result of the increase in greenhouse gas emissions in the atmosphere?

- (a) Reduction in the size of the ozone hole (b) Increased rates of polar ice melting
(c) Decrease in atmospheric carbon dioxide levels (d) Global temperature decrease

4

Study the following diagram and answer: What are the elements X, Y, Z in order?

- (a) Phosphorus – Nitrogen – Potassium
(b) Phosphorus – Potassium – Nitrogen
(c) Nitrogen – Phosphorus – Potassium
(d) Potassium – Nitrogen – Phosphorus



5

A child has a body temperature of 38°C .

What is the equivalent temperature on the Kelvin scale?

- (a) 133 K (b) 211 K (c) 311 K (d) 333 K

6 What is the equation that describes the reaction of carbon dioxide when acid rain is formed?

- (a) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$ (b) $\text{CO}_2 + \text{O}_2 \rightarrow \text{CO} + \text{H}_2\text{O}$
(c) $\text{CO}_2 \rightarrow \text{CO} + \text{O}_2$ (d) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{CO} + \text{H}_2\text{O}$

7 When performing electrolysis on a quantity of water and collecting the hydrogen and oxygen gases separately, the total volume of both gases equals 60 cm^3 . Based on this, which of the following alternatives is correct?

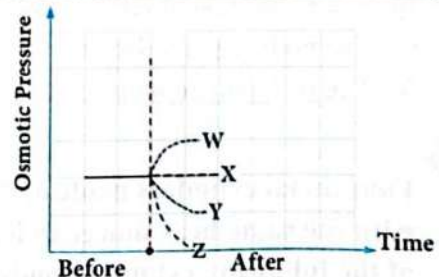
	Volume of oxygen gas	Volume of hydrogen gas
(a)	60 cm^3	60 cm^3
(b)	30 cm^3	30 cm^3
(c)	40 cm^3	20 cm^3
(d)	20 cm^3	40 cm^3

8 The temperatures of seas and oceans change only slightly when exposed to large amounts of thermal energy. Which of the following is a key factor in sustaining marine life and explains the previous statement?

- (a) Water density (b) Water's specific heat
(c) Water's pH value (d) Water's osmotic pressure

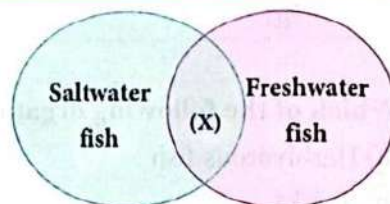
9 Based on your study of the accompanying graph: Which of the following represents the change caused by adding 25 grams of sodium chloride to 200 ml of pure water over time?

- (a) (W)
(b) (X)
(c) (Y)
(d) (Z)



10 From the accompanying schematic, deduce the structural adaptation represented by letter (X)?

- (a) Compressed body
(b) Streamlined body
(c) Increased salt concentration in cells
(d) Decreased salt concentration in cells

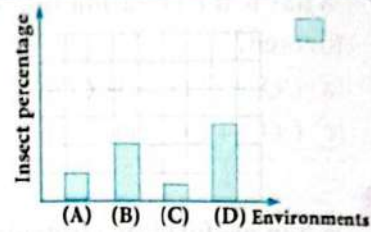


11

Study the accompanying graph showing the percentage of insects in four agricultural environments.

In which of these environments was the pesticide chlordane used?

- (a) (A) (b) (B)
(c) (C) (d) (D)



12

Four students measured the pH value of four water samples and recorded the values in the specified table:

Student	A	B	C	D
Water	Clouds	Groundwater	Freshwater	Seawater
pH	6	7	7	8

Which student's measurement was wrong?

- (a) A (b) B
(c) C (d) D

13

What happens if sulfur replaces oxygen in a water molecule?

- (a) The boiling point rises to 100°C
(c) The boiling point remains the same
(b) The boiling point decreases below zero
(d) The molecule remains in its gaseous state

14

Four metal cylinders made of the same material at the same temperature were heated with the same heat source to increase their temperature by the same amount. Which of the following cylinders cools the fastest?



(a)



(b)



(c)



(d)

15

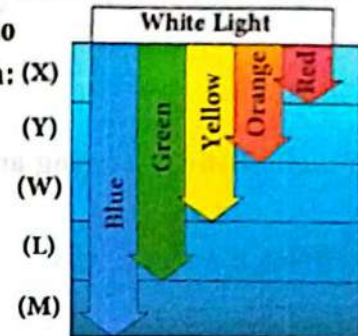
Which of the following organisms obtains energy differently from other organisms?

- (a) Herbivorous fish
(b) Sharks
(c) Algae
(d) Large fish diseases

16 Explain: Why is there an abundance of glucose in the cytoplasm of the wood frog's cells during winter?

17 In the given diagram illustrating light penetration into water, here are the questions translated into English: (X)

- (1) In which zone is the highest rate of photosynthesis?
- (2) In which zone can living organisms survive?



18 "Provide a precise scientific explanation for the following scientific fact:
Water molecules are attracted to each other."



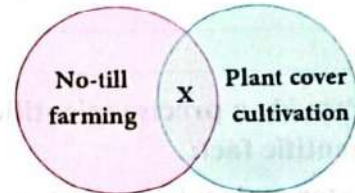
First Multiple Choice Questions

1 Which of the following are results of fossil fuel combustion in the environment?

- (a) Reduced acid rain
- (b) Increased biodiversity
- (c) Reduced oxygen gas
- (d) Reduced carbon dioxide gas

2 Study the accompanying diagram and determine What could "X" represent ?

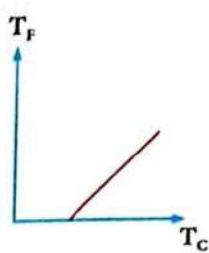
- (a) Reducing soil erosion
- (b) Crop rotation
- (c) Adopting cyclic systems
- (d) Soil exhaustion



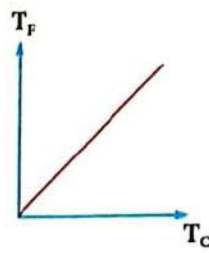
3 Root erosion of plants due to acid rain in an agricultural field. Which of the following minerals is observed to increase in soil analysis ?

- (a) Calcium
- (b) Magnesium
- (c) Aluminum
- (d) Sodium

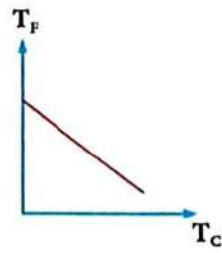
4 Which of the following graphs represents the relationship between temperature in Fahrenheit and temperature in Celsius for several objects



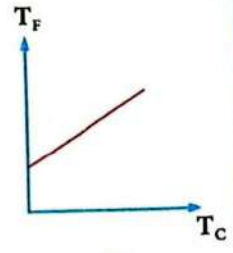
(a)



(b)



(c)



(d)

5 How does ozone contribute to the protection of life on Earth ?

- (a) Increases temperature
- (b) Absorbs harmful radiation
- (c) Reduces water pollution
- (d) Increases carbon dioxide levels

6 Which of the following alternatives represents the ability of marine organisms to perform photosynthesis ?

	Algae	Zooplankton	Coral Reefs	Fish
(a)	✓	✓	X	X
(b)	✓	X	X	X
(c)	X	X	X	✓
(d)	✓	X	✓	X

7 Which of the following equations represents the decomposition of ozone by ultraviolet radiation ?

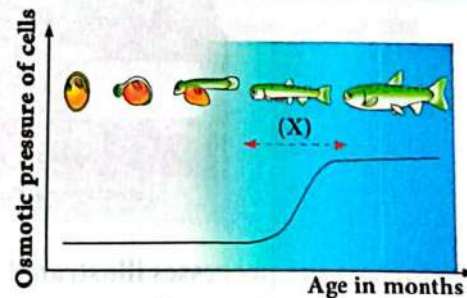
- (a) $O_2 + O \rightarrow O_3$
 (b) $O_3 \rightarrow O_2 + O$
 (c) $NO_2 + O_2 \rightarrow NO + O_3$
 (d) $O_3 \rightleftharpoons O + O_2$

8 Which of the following chemicals causes poisoning inside the intestines of living organisms ?

- (a) Mercury (b) Dieldrin
 (c) Formaldehyde (d) D.D.T pesticide

9 Study the accompanying figure that illustrates the life cycle of salmon, and answer: What is the adaptation observed during stage "X" ?

- (a) Adaptation to increased pressure
 (b) Adaptation to low oxygen
 (c) Osmotic adaptation
 (d) Thermal adaptation



10 All of the following are results of the polarity of the water molecule except

- (a) Water molecules bond together with hydrogen bonds
 (b) The ability to dissolve many mineral salts
 (c) The boiling point of water rises to $100^\circ C$
 (d) The ability to dissolve nonpolar organic compounds

11 One of the contributions of soil to nutrient cycling is that it

- (a) Filters impurities from water
- (b) Provides nutrients to plants
- (c) Supports and protects plants from erosion
- (d) Provides a suitable environment for insects and worms

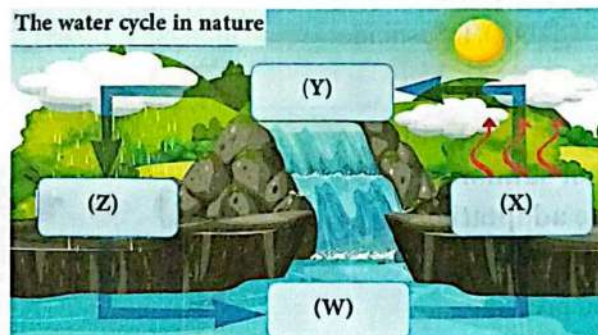
12 Biological pollutants such as bacteria and microorganisms in water can cause humans to suffer from diseases of the

- (a) Respiratory system
- (b) Digestive system
- (c) Nervous system
- (d) Brain tumors

13 Which of the following organelles in red blood cells allows water and ions to pass into the cytoplasm ?

- (a) Membrane
- (b) Wall
- (c) Nucleus
- (d) Mitochondria

14 The accompanying figure shows some physical processes occurring to water in a closed path. Study it carefully and deduce:



Which of the processes illustrated involves the transition of water from a gaseous state to a liquid state ?

- (a) (X)
- (b) (Y)
- (c) (Z)
- (d) (W)

15 The presence of water is essential for the completion of which type of weathering

- (a) Mechanical
- (b) Biological
- (c) Chemical
- (d) Physical

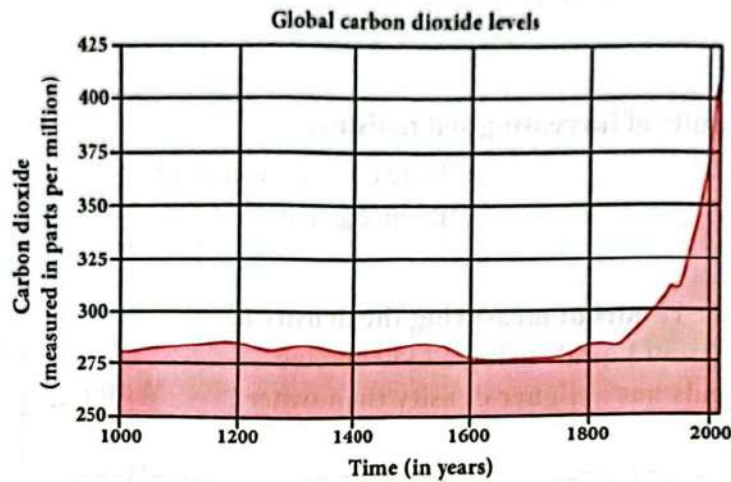
Second Essay Questions

16

Explain: Why do inhabitants of high altitudes have relatively larger hearts?

17

You are given a graph showing the global concentration of carbon dioxide levels



- (1) Mention one reason responsible for the change in carbon dioxide levels between 1800 and 2000 AD
- (2) State the impact of this on global climate

18

Two water samples, one pure and the other impure. How can we determine the purity of one without the other?

8

The exam



The Eighth Comprehensive Exam

Final exam on the curriculum



The questions marked with **E** are answered with an explanation

First Multiple Choice Questions

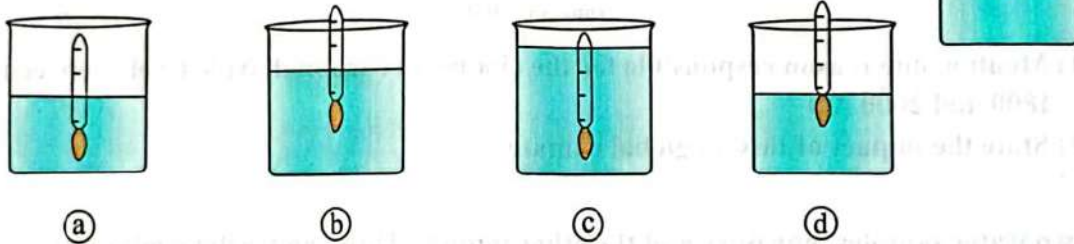
1

What are the results of increasing soil moisture ?

- (a) Improve aeration
- (b) Increase mineral content
- (c) Root rot
- (d) Reduce salinity

2

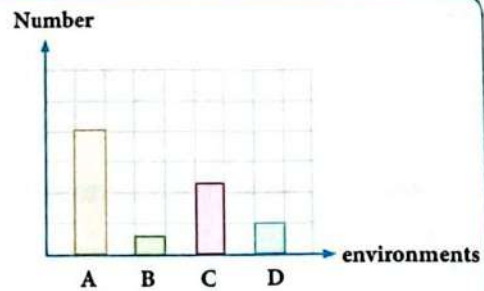
The figure shows the results of measuring the density of water and four different liquids using a hydrometer. Which of these liquids has a higher density than water ?



3

Study the accompanying graph, which shows the number of bald eagles in four different environments. In which of these environments has the use of D.D.T pesticide increased ?

- (a) (A)
- (b) (B)
- (c) (C)
- (d) (D)



4

The main reason for the sun's heat reaching the Earth is through the process of

- (a) Conduction
- (b) Convection
- (c) Radiation
- (d) Contact

5 Why does the Earth retain its atmosphere while Mercury does not ?

- (a) Because the Earth rotates faster
- (b) Because Mercury does not have a magnetic field
- (c) Because Earth's gravity is stronger than Mercury's
- (d) Because Mercury is closer to the sun, causing it to lose its atmosphere

6 How is carbon dioxide converted into oxygen in the process of photosynthesis?

- (a) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- (b) $\text{CO}_2 + \text{H}_2 \rightarrow \text{O} + \text{H}_2\text{O}$
- (c) $\text{CO}_2 + \text{O}_2 \rightarrow \text{CO} + \text{O}_2$
- (d) $\text{CO}_2 \rightarrow \text{CO} + \text{O}_2$

7 What role does activated carbon play in the chemical treatment of water ?

- (a) Desalination of water
- (b) Dissolving sewage waste
- (c) Reducing the organic content
- (d) Purifying water from gases

8 Which of the following organisms is most likely to become extinct due to habitat destruction under the impact of global warming ?



(a)



(b)



(c)

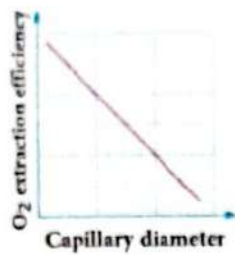


(d)

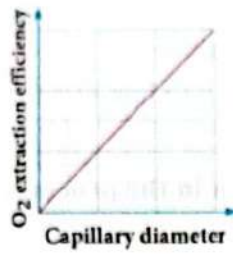
9 The boiling point of aqueous solution of table salt may equal , while the freezing point of aqueous solution of table salt may equal

- (a) 102°C , 2°C
- (b) 102°C , -3.72°C
- (c) 98°C , 2°C
- (d) 98°C , -3.72°C

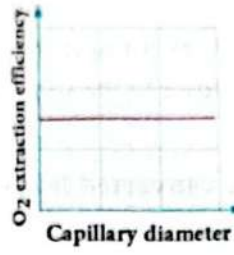
Which of the following expresses the correct relationship between capillary diameter and oxygen extraction efficiency in the marine environment ?



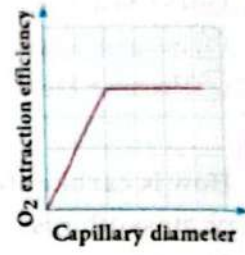
(a)



(b)



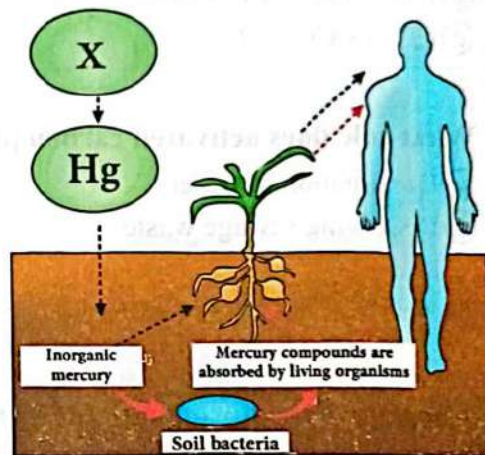
(c)



(d)

If the symbol (X) in the figure refers to sources of mercury pollution, which of the following are those sources ?

- (a) Pesticides
- (b) Industrial waste
- (c) Volatile organic compounds
- (d) Fine ash



All of the following types of water can be basic except

- (a) Saltwater
- (b) Freshwater
- (c) Groundwater
- (d) Rainwater

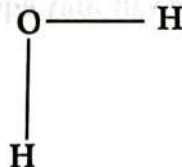
What process occurs to the product of transpiration during the hydrological cycle ?

- (a) Evaporation
- (b) Seepage
- (c) Precipitation
- (d) Condensation

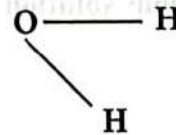
Which of the following diagrams correctly represents the structure of a water molecule and the angle between the two covalent bonds in it ?



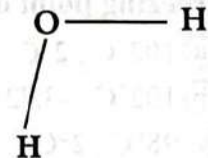
(a)



(b)



(c)



(d)

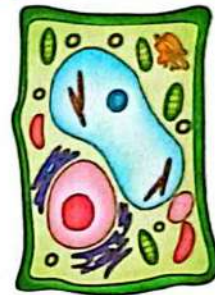
15 Which of the following leads to soil contamination by heavy metals ?

- (a) Accumulation of nitrates in the soil
- (b) Use of organic fertilizers
- (c) Discharge of industrial waste
- (d) Reliance on organic farming techniques

Second Essay Questions

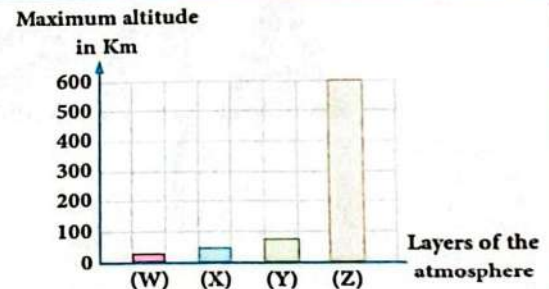
16 The figure represents a plant cell model. Based on your study of the importance of water in sustaining life, explain the role of water when passing from

- (1) The environment to the cell
- (2) The cell to the environment



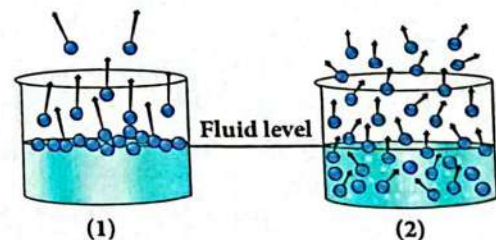
17 Study the following diagram and deduce

- (1) Which letter indicates the layer where ozone gas can be found
- (2) What is the importance of layer (Y)
- (3) What happens if layer (Z) loses its unique properties



18 The figure shows two containers (1) and (2) in the same room, each containing pure water at different temperatures. Study them carefully and deduce

- (1) What physical process is occurring in the water inside the two containers
- (2) In which of the two containers is the difference between the vapor pressure of its water and atmospheric pressure greater?



1st Multiple Choice Questions

(1) (c)	(2) (b)	(3) (d)	(4) (b)	(5) (d)
(6) (a)	(7) (c)	(8) (c)	(9) (a)	(10) (c)
(11) (b)	(12) (c)	(13) (c)	(14) (b)	(15) (b)



Multiple Choice Questions Explanations

(3) (d)

The parent rock is the solid rock from which soil is formed and has been barely affected by erosion.

(4) (b)

Because it lives in cold regions, it produces large amounts of glucose, which acts as an antifreeze substance. This prevents the formation of ice crystals in the cells, protecting them from damage.

(5) (d)

$$^{\circ}\text{F} = \left(\frac{9}{5} \times ^{\circ}\text{C}\right) + 32$$

$$^{\circ}\text{F} = \frac{9}{5} \times 10 + 32 = 50$$

(7) (c)

Just as glass prevents heat radiation from escaping the greenhouse, greenhouse gases prevent long wavelength radiation from passing out.

(8) (c)

The pressure decreases, the mercury level drops, and level L falls while point P has a Torricellian vacuum, causing no further change.

(13) (c)

Because any disturbance in this layer affects its electrical charge and the ionization of atmospheric particles, long distance wireless communications weaken due to reduced ability to reflect radio waves.

2nd

Essay Questions

(16)

The frog remains in deep hibernation, which reduces oxygen and energy consumption, allowing it to survive until temperatures rise again.

(17)

We calculate the amount of heat required to raise the temperature of each material separately, then we sum them up:

$$Q_{\text{copper}} = M_{\text{copper}} \times C_{\text{copper}} \times \Delta T$$

$$\Delta T = 100 \times 0.39 \times 80 = 3120 \text{ J}$$

$$Q_{\text{aluminum}} = M_{\text{aluminum}} \times C_{\text{aluminum}} \times \Delta T$$

$$\Delta T = 200 \times 0.9 \times 80 = 14400 \text{ J}$$

$$Q_{\text{Total}} = Q_{\text{copper}} + Q_{\text{aluminum}} = 17520 \text{ J}$$

(18)

Concentration affects ocean currents; the higher the concentration, the higher the density, which creates vertical currents within the water.

2? Model

Final Exam
second Final Exam

1st Multiple Choice Questions

(1) (b)	(2) (c)	(3) (c)	(4) (b)	(5) (c)
(6) (b)	(7) (c)	(8) (c)	(9) (d)	(10) (c)
(11) (d)	(12) (a)	(13) (a)	(14) (a)	(15) (a)



Multiple Choice Questions Explanations

(4) (b)

Reducing the temperature leads to a reduction in the air's ability to hold water vapor, which causes a decrease in humidity levels.

(5) (c)

Because the speed is less than the escape velocity (V_e).

(8) (c)

Because the chlorine level is within the acceptable limit for drinking water.

(9) (d)

The ozone layer is known for its ability to absorb short wave ultraviolet radiation.

2nd Essay Questions

(16)

Glucose protects the cells from damage caused by the formation of ice crystals, allowing the frog to remain in deep hibernation without harming its cells.

(17)

(1)

— Case (Y).

Because adding sugar raises the boiling point of the solution due to the effect of the impurities (sugar) that hinder the evaporation of water molecules, causing the solution to require a higher temperature to boil compared to pure water.

(2)

Case (X).

(18)

Due to its ability to make complex physiological adaptations. For example, its circulatory system and respiratory system adjust to changes in salinity levels and varying oxygen quantities in both fresh and saltwater environments.

3? Model

Final Exam
The Third Final Exam

1st Multiple Choice Questions

(1) (c)	(2) (b)	(3) (d)	(4) (c)	(5) (d)
(6) (a)	(7) (d)	(8) (b)	(9) (d)	(10) (c)
(11) (a)	(12) (a)	(13) (c)	(14) (b)	(15) (b)



Multiple Choice Questions Explanations

(1) (c)

The distance between the sediments is large in sandy soil, which is characterized by fast water drainage.

(4) (c)

Since your friend is American, he uses the Fahrenheit scale ($^{\circ}\text{F}$). To calculate:

$$t_F = \left(\frac{9}{5} \times t_C\right) + 32$$

$$t_F = \left(\frac{9}{5} \times 30\right) + 32 = 95^{\circ}\text{F}$$

(5) (d)

Because non-electric cars run on gasoline, increasing the greenhouse effect.

(8) (b)

Since the atmospheric pressure is constant, the height of the mercury

column inside the tube remains unchanged. Thus, when the tube is tilted, the size of the Torricellian vacuum must decrease to keep the height of the mercury column steady. (9) (d)

If the escape velocity decreases, gravity becomes less capable of retaining light gases, allowing them to escape the atmosphere.

(12) (a)

Due to the high mercury content.

2nd Essay Questions

(16)

The substance acts as an antifreeze. it prevents the formation of ice crystals in the fish's blood and tissues.

(17)

At higher altitudes, the atmospheric pressure is lower, so the water requires less heat energy (i.e., a lower temperature) to reach the vapor pressure that matches the surrounding atmospheric pressure, causing it to boil at temperatures below 100°C .

(18)

(1) W

(2) X

1st Multiple Choice Questions

(1) (b)	(2) (d)	(3) (b)	(4) (a)	(5) (a)
(6) (b)	(7) (c)	(8) (c)	(9) (d)	(10) (a)
(11) (a)	(12) (c)	(13) (a)	(14) (d)	(15) (d)



Multiple Choice Questions Explanations

(3) (b)

Secondary minerals are produced from the chemical weathering of primary minerals.

(4) (a)

$$^{\circ}\text{F} = \frac{9}{5}^{\circ}\text{C} + 32$$

Substituting for $^{\circ}\text{F}$ with $^{\circ}\text{C}$

$$^{\circ}\text{C} = \frac{9}{5}^{\circ}\text{C} + 32$$

$$\frac{-4}{5}^{\circ}\text{C} = 32$$

$$^{\circ}\text{C} = -40^{\circ}$$

(16)

– Fish (X): Concentrated urine
Since it lives in saltwater, it needs to swallow large amounts of water to compensate for water loss from its body through osmosis, with the source being the highly saline seawater. It then excretes the excess salts through the kidneys and specialized cells in the gills.

– Fish (Y): Dilute urine

– Since it lives in freshwater, it eliminates the excess water that enters its body through the skin, mouth, and gills via the kidneys in the form of dilute urine.

(17)

Due to the bursting of the tiny blood capillaries in the nose because of the widening difference between the blood pressure inside them and the lower atmospheric pressure outside.

(18)

This leads to a reduction in the plants' ability to perform photosynthesis, which weakens their growth and productivity.

1st Multiple Choice Questions

(1) (a)	(2) (d)	(3) (b)	(4) (b)	(5) (b)
(6) (a)	(7) (b)	(8) (b)	(9) (c)	(10) (d)
(11) (b)	(12) (d)	(13) (d)	(14) (d)	(15) (b)



Multiple Choice Questions Explanations

(3) (b)

The larger the size of the soil particles, the greater the water leakage.

(16)

The electric eel. These fish slow down their metabolism rate to reduce their oxygen needs as they live at depths reaching thousands of meters, where oxygen levels are extremely low.

(17)

Icefish have a reduced capacity to transport oxygen through the blood, but they compensate for this by absorbing oxygen directly from the cold, oxygen-rich waters of the southern pole.

(18)

Trees absorb carbon dioxide during photosynthesis, reducing the concentration of greenhouse gases.

6
Exam

Comprehensive Exam
Comprehensive exam on the curriculum

1st Multiple Choice Questions

(1) (b)	(2) (b)	(3) (b)	(4) (a)	(5) (c)
(6) (a)	(7) (d)	(8) (b)	(9) (a)	(10) (b)
(11) (c)	(12) (a)	(13) (c)	(14) (a)	(15) (c)



Multiple Choice Questions Explanations

(2) (b)

Because the stability of the ecosystem depends on the diversity of prey, they should be larger in number and more diverse than the number of predators.

(5) (c)

$$T^{\circ}(\text{K}) = t^{\circ}(\text{C}) + 273$$

$$T^{\circ}(\text{K}) = 38 + 273 = 311^{\circ}\text{K}$$

(10) (b)

Because fish, in general, have a streamlined body that helps them move through water with minimal resistance and friction.

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2nd

Essay Questions

(16)

Because it acts as an anti-freeze substance, it prevents the formation of ice crystals in the cells and protects them from damage.

(17)

(1)

(1) Zone (X)

(2)

All zones from (X to M)

(18)

Because they are polar molecules with a partial negative charge on the oxygen atom and a partial positive charge on the hydrogen atoms due to the large difference in electronegativity between them. The positive part of one molecule attracts the negative part of another molecule by forming hydrogen bonds between them.

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Test

Comprehensive Exam
Final exam on the curriculum

1st Multiple Choice Questions

(1) (c)	(2) (u)	(3) (c)	(4) (d)	(5) (b)
(6) (b)	(7) (b)	(8) (a)	(9) (c)	(10) (d)
(11) (b)	(12) (b)	(13) (a)	(14) (b)	(15) (c)



Multiple Choice Questions Explanations

(3) (c)

When roots are eroded by acid rain, they become poisoned by toxic metals such as aluminum.

(4) (d)

Because it's a straight-line equation.

$$TF = 32 + \frac{5}{9} TC$$

(9) (c)

When salmon eggs hatch, the young spend the first phase of their life in freshwater.

During this stage, the young adapt to the freshwater environment, and once they reach a certain size, the fish undergo a biological process

known as "osmoregulation (as explained in phase X)," which allows them to transition to saltwater in the sea. When the salmon reach sexual maturity, they start returning to the rivers where they were born to reproduce.

2nd

Essay Questions

(16)

Due to the low oxygen content in the air, the number of red blood cells increases to transport a larger amount of oxygen, leading to an increase in blood volume and heart size to pump the blood.

(17)

(1) The burning of fossil fuels like coal, oil, and gas.

(2) Severe climate changes such as (hurricanes, floods, droughts, etc.)

(18)

By determining the boiling point of each, and comparing them with the normal boiling point of water, the sample with a boiling point of 100°C at normal atmospheric pressure is pure, and the other is impure.

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1st Multiple Choice Questions

(1) (c)	(2) (c)	(3) (b)	(4) (c)	(5) (c)
(6) (a)	(7) (c)	(8) (b)	(9) (b)	(10) (a)
(11) (b)	(12) (d)	(13) (d)	(14) (d)	(15) (c)



Multiple Choice Questions Explanations

(1) (c)

Increasing soil moisture prevents air from reaching the roots, leading to root rot due to a lack of oxygen.

(3) (b)

The pesticide D.D.T led to a decline in the number of bald eagles.

(4) (c)

Because there is a vacuum between the Sun and Earth, heat is transferred by radiation.

(10) (a)

Explanation: Electric eel fish develop fine capillaries (small

diameter) to increase oxygen extraction efficiency (O_2).

2nd Essay Questions

(16)

(1) Water carries the necessary materials for energy production into the cell.

(2) It helps in the disposal of waste.

(17)

(1) Layer (W) and layer (X).

(2) It protects the Earth by burning meteors.

(3) If lost, there would be no reflection of radio waves, hindering communication devices.

(18)

(1) In container (1): Water evaporates without reaching boiling evaporation.

In container (2): Water is boiling.

(2) Container (1), because it has not reached boiling point yet.

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

